DOCUMENT RESUME

ED 202 967 UD 021 466

TITLE	Minimum Teaching Essentials: Grades 3-5.
INSTITUTION	New York City Board of Education, Brooklyn, N.Y. Div. of Curriculum and Instruction.
REPORT NO	ISBN-88315-456-0; NYCBE-CB-01-000-81
PUB DATE	80
NOTE	304p.; For related documents, see ED 181 828, ED 190 695, and UD 021 456-460, UD 021 463-471, and UD 021 474. Some tables and credits may be marginally legible due to small type size.
AVAILABLE FROM	Board of Education of the City of New York, Publications Sales Office, 110 Livingston Street, Brooklyn, NY 11201 ($4.00; make checks payable to Publication Sales).
EDRS PRICE	MF01/PC13 Plus Postage.
DESCRIPTORS	Art Education; Bilingual Education; Career Education; Child Development; Communication Skills; Content Area Reading; Curriculum Guides; Elementary Education; English (Second Language); Grade 3; Grade 4; Grade 5; Health Education; Library Skills; Mathematics Instruction; *Minimum Competencies; Music Education; Physical Education; Science Instruction; Second Language Instruction; Social Studies; Study Skills
IDENTIFIERS	*New York City Board of Education

ABSTRACT

This edition of "minimum teaching essentials" presents the minimum in basic skills and knowledge which must be taught to New York City school students in grades 3-5. The bulletin begins with an overview of each subject area that highlights the major components of the individual disciplines and indicates the role each area plays in the total educational process. These areas include: (1) art; (2) bilingual education; (3) career education; (4) foreign language; (5) health education; (6) library media; (7) mathematics; (8) music; (9) physical education; (10) science; and (11) social studies. Work study skills for all subject areas are also presented. Curriculum content areas are listed here with descriptors for specific skills and knowledge objectives. Similar programs are given for: (1) communication arts, which includes listening, speaking, reading, and writing; (2) English as a second language; and (3) foreign languages in the Elementary Schools (FLES). A section on child development reviews children's basic psychological needs, and physical, emotional, and intellectual growth patterns of children in grades 3-5. A phonemes table and a list of curriculum publications are appended. (APM)

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MINIMUM TEACHING ESSENTIALS

Grades 3-5

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ISBN 88315-456-0
CURR. 01-0000-81

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ISBN 88315-456-0 Curriculum No. 01-000-81

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MINIMUM TEACHING ESSENTIALS

Grades 3-5

NEW YORK CITY BOARD OF EDUCATION
OFFICE OF CURRICULUM DEVELOPMENT AND SUPPORT • DIVISION OF CURRICULUM & INSTRUCTION

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Foreword

Decentralization imposes upon District Community School Boards the responsibility to control and operate, in a form consistent with the policies of the Central Board of Education, all pre-kindergarten, nursery, kindergarten, elementary, intermediate, and junior high schools. Community Boards also decide matters of instruction and select textbooks and ancillary materials, subject to the prior approval of the Chancellor. Decentralization thus allows districts the flexibility and differentiation necessary to meet the varying needs of their students.

At the same time, the decentralization law also continues the power vested in the Office of the Chancellor to "promulgate minimum educational standards and curriculum requirements for all schools and programs throughout the city district."* It is hoped that Minimum Teaching Essentials K-9 will provide every educator with the knowledge of what must be taught in content and basic skills for each grade level in all curriculum areas, thus offering every student an instructional program governed by the approved curriculum. Presenting such essentials is also a step toward creating the continuity of instruction desirable for a city with high pupil mobility.

Students in most classrooms will be taught more than is specified as a minimum. Supervisors and teachers will innovate, enrich, and extend curricula whenever possible. But this bulletin forms the teaching base required to maintain educational standards and ensure appropriate learning opportunities in every classroom. We can offer our students no less.

Frank J. Macchiarola
Chancellor

* New York State Education Law, Article 52, paragraph 2590-h.

Acknowledgments

The curriculum publication, Minimum Teaching Essentials K-9, was initiated by Irving Anker, former Chancellor of the New York City Public School System. Both the experimental and the revised editions were prepared as projects of the Division of Curriculum and Instruction, Arnold Webb, Executive Director*.

Grateful appreciation is extended to all the supervisors and staff of the Centers within the Division of Curriculum and Instruction. Without their support, cooperation and expertise, this document would not have been possible. Charlotte Frank, Director of the Center for Curriculum Development, was responsible for coordinating the contributions of the subject area Centers and preparing the manuscript for publication. The supervisors who were responsible for development of the materials are listed below under their contributing Center.

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Health and Physical Education: Irwin Tobin, Director; Bernard Kirschenbaum and Angela Zirpiades, Assistant Directors of Physical Education; Melvin Warren, Assistant Director of Health Education

*The organizational structure and titles throughout the acknowledgments are those in effect at the time of the initial printing of Minimum Teaching Essentials: Grades K-9, from which book this edition has been extracted.

Mathematics and Science: Frank Wohlfort, Assistant Director of Mathematics; Sam Fried, Assistant Director of Science
School Development: Hortense Jones, Director
Library, Media and Telecommunication: Morris Freedman, Director; Geraldine Clark, Assistant Director, Head of Library Unit
Reading: Marian Power, Director (Acting)

Special thanks is extended to teachers, school and district supervisors and members of institutions of higher education whose suggestions have contributed greatly to this document.

Because of the large number of individual contributors, names have been listed in the section entitled Credits.

The following pages have been extracted from the major work Minimum Teaching Essentials: Grades K-9. Only those pages which are of immediate concern to the teacher of Grades 3 through 5 are included. However, the teacher is asked to note that in the area of Communication Arts, skills and knowledge for kindergarten through grade 6 have been included because of the importance of continuity in the development of the language arts skills.

--Editor

Introduction

This revised edition of Minimum Teaching Essentials K-9 presents the minimum in basic skills and knowledge which must be taught within each curriculum area. It does not constitute the full scope of the various courses of study. It should also be noted that this publication does not include teacher methodology, student attitudes and appreciations, or moral and ethical values. Previously published bulletins provide the necessary support to help education design and implement the complete and appropriate curriculum. The purpose of this document is to provide administrators, teachers, parents, and other members of the educational community with a comprehensive resource which identifies, within all disciplines, the basic body of knowledge and skills to be taught at each grade or level.

The organization of the bulletin begins with a broad perspective of each subject area. These statements highlight the major components of the individual disciplines and indicate the role each area plays in the total educational process. Statements of the philosophy, goals, and guidelines for bilingual education are included. Career education is represented with basic understandings for each grade.

Reading and language arts are integrated as "communication arts," reflecting the interdependent nature of listening, speaking, reading and writing. This arrangement also reinforces the principle that specific reading skills are a means to increase students' abilities to read for pleasure and information, and are not ends in themselves. The communication arts section is presented in uninterrupted sequence K-9 and precedes the other subject areas.

A child development focus appears before grades K-2, 3-5, and 6-9. This section reviews children's basic psychological needs, and the physical, socio-emotional, and intellectual growth patterns expected of a particular age group. The work-study skills used in all subject areas are presented in chart form for K-2, 3-5, and 6-9.

English as a second language and foreign languages in the elementary school (FLES) are also treated by levels and precede the subjects which are grouped by grade. Specialized subjects for the intermediate or junior high school are presented course by course. These are: foreign languages, home economics, industrial arts, and typewriting.

All other curriculum subjects within a grade level are grouped together, i.e., for the third grade the order is art, health education, library-media, music, physical education, science, and social studies. Each page presents content area and/or topics with descriptors for specific skills and knowledge. References for suggested classroom implementation are keyed to existing bulletins where relevant. Bulletin titles are found on the first page of subject areas for each grade. Some subjects offer suggestions for the number of days or weeks to be devoted to a topic within that area.

The publication of this bulletin represents a major step in establishing minimum curriculum essentials. The translation of these standards into effective learning for every student will be realized only with the creative skill and dedication of all of us in the educational community of New York City.

Arnold Webb
Executive Director

Overview of Curriculum Areas

ART

Growth in art expression is part of the total growth of the child. When the experience which motivates the art is child centered, authentic, and personal, the art product will ring true.

The child gains power in self-expression when the art experiences have continuity, when they provide leeway for self-evaluation, and when they build upon cumulative skills in the making of art products.

All children need rich art experiences which are integral to their total physical, perceptual, mental and social development.

BILINGUAL EDUCATION

One of the most fundamental and universally acceptable concepts in education is that an instructional program should utilize the student's already acquired language skills and thought processes as a basis for fostering intellectual development and mastery of the basic skills of communication and reasoning. This concept is equally valid for all pupils, and it is especially appropriate for students living within our society whose language and culture differ from our own. Educational success for linguistically different students is enhanced by permitting them to learn in their first language while they are learning to function successfully in English. Thus, they will have an opportunity to be better prepared to participate meaningfully within their new environment. The primary goals of a bilingual education program are excellence in both languages and the development of basic skills. The inherent validity of these goals makes it clear that bilingual programs can be made available to all pupils within our system for the purpose of enriching their educational and life experiences. It is felt that this comprehensive approach will lead to the preparation of an individual who will be capable of leading a full and productive life, possessing the ability to adapt to new demands, opportunities, and values in a constantly changing world.

Bilingual education has been defined as the use of two languages as mediums of instruction for the same pupil population in a well-organized program which encompasses part or all of the regular curriculum and which includes the study of the history and culture associated with both languages. In the United States, of course, one of the two languages will be English. The bilingual program incorporates an interdisciplinary approach which includes all the required curriculum areas that are part of the traditional school program. Thus, for example, the mathematics curriculum will include the same scope and sequence made available to other students, the only difference being the use of a language other than English as the vehicle for instruction.

ELEMENTS OF A BILINGUAL PROGRAM

Every bilingual program which sets the aforementioned goals and objectives should include the following elements:

PROVISION FOR THE REINFORCEMENT AND SEQUENTIAL DEVELOPMENT OF THE PUPIL'S DOMINANT LANGUAGE

It provides for language arts instruction in the pupil's native language,in which the four language skills will be developed sequentially, e.g., listening, speaking, reading, and writing. Thus, we use the language in which the child has already acquired the sound system, basic structure, and vocabulary in the development of cognitive as well as other skills.

DEVELOPMENT OF THE ABILITY TO UNDERSTAND, SPEAK, READ, AND WRITE A SECOND LANGUAGE

The student begins immediately to learn the second language through the utilization of a sequentially based methodology in second language teaching. A typical English as a second language program will begin with an emphasis on aural and oral skills, and gradually reaches the stage where the student can advance to reading and writing.

PROVISION FOR SEQUENTIAL INSTRUCTION IN THE STUDENT'S NATIVE LANGUAGE IN THE CURRICULUM AREAS CONSISTENT WITH THE ESTABLISHED REQUIREMENTS FOR THE CITY'S SCHOOLS

Content areas which are considered to be critical to the intellectual and emotional development of students and to their success in the school environment are initially taught through the use of their first language, thereby permitting and encouraging them to enter and participate immediately in all classroom activities and draw from previous experiences as bases for developing new ideas and concepts.

DEVELOPMENT, REINFORCEMENT, AND ENRICHMENT OF STUDENTS' APPRECIATION AND KNOWLEDGE OF THEIR OWN HISTORY AND CULTURE, AS WELL AS THE HISTORY AND CULTURE ASSOCIATED WITH THE SECOND LANGUAGE

The historical contributions and cultural characteristics identified with the people representing both linguistic communities are an integral part of the program. Relationships, similarities, and differences are presented in the social development of state, nation, and community, in order to create an understanding and appreciation of each in a positive rather than a negative sense.

BILINGUAL EDUCATION

By providing the opportunities for successful participation and achievement, students are encouraged to develop acceptance of themselves and of others through social interaction.

CAREER EDUCATION

Career education is an educational approach which seeks to provide students with the knowledge and skills necessary for becoming self-fulfilled and productive members of society. It incorporates large components of the humanistic and experiential learning movements, and seeks to educate the total person. It is as concerned with the development of basic academic skills as it is with the development of career awareness and occupational skills. It seeks to expand, not narrow, the learner's career horizons by incorporating into the regular curriculum concepts of personal growth and career development. Career education is a process, not a product. It is a process which seeks to make the educational experience more meaningful through bridging the gap between what is taught in the classroom and what the learner perceives as going on in the "real" world.

To accomplish this, it offers a variety of strategies sculpted around the concept of working its eight essential elements into the classroom on a daily basis. These elements are:

- .self awareness
- .decision-making skills
- .attitudes and appreciations
- .economic awareness
- .educational awareness
- .career awareness
- .beginning competencies
- .employability skills

Such elements as career awareness, educational awareness, and economic awareness seek to inform the learner of the broad vista of career possibilities; establish a link between what is being taught in school and what goes on in the world outside the classroom, and give the learner an understanding of the roles of consumer, producer, and provider as these operate in the larger economic society.

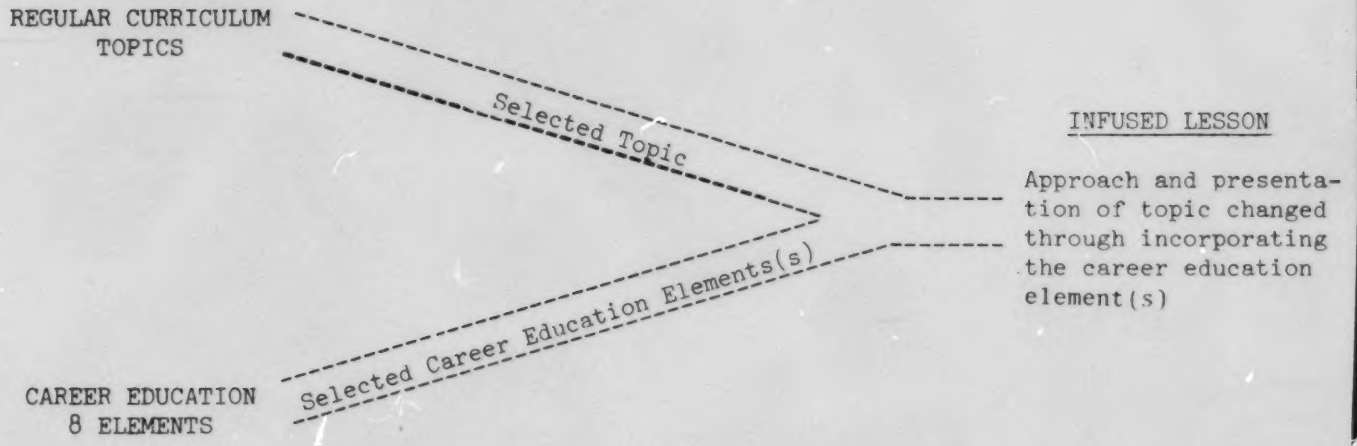
Such elements as self-awareness, decision-making skills, and attitudes and appreciations seek to give learners insight into their own abilities, interests, and thought processes; and help them understand the dynamics of decision-making:

foreseeing consequences, considering alternatives, making a decision, acting on it, and assessing the outcome; provide them with decision-making experiences in real and simulated situations; assist them in exploring personal values, and in relating these values to school experiences and possible career options.

Such elements as beginning competencies and employability skills seek to give learners a strong foundation of basic academic and manipulative skills essential to success in school and work and provide them with the specific skills necessary for further education or training, or for entry-level employment. An emphasis on "hands-on," learning by doing, is a shaping factor of all career education.

The main strategy for implementing career education in the classroom is infusion. Infusion is the incorporation of at least one of the eight career education elements mentioned above into the regular curriculum, giving the resultant lesson, be it math, science, language arts, social studies, or some other subject area, a career education focus (see diagram).

Career education is much more, then, than just teaching about jobs. On the following pages, basic understandings for each grade, K - 9, are presented to provide a framework for career education implementation at the classroom level. These outcomes are adapted from the National Career Education Model Goal Statements.


REGULAR CURRICULUM TOPICS
Selected Topic
INFUSED LESSON
Approach and presentation of topic changed through incorporating the career education element(s)
Selected Career Education Elements(s)
CAREER EDUCATION 8 ELEMENTS

In addition to the infusion of a career education element, occupational information may frequently be incorporated in a lesson. The Basic Occupational Clusters into which careers are grouped are:

Health
Marine Science
Consumer and Homemaking Education
Manufacturing
Marketing and Distribution
Public Service
Agri-Business and Natural Resources
Communications and Media
Transportation
Fine Arts and Humanities
Personal Services
Construction
Environment
Business and Office
Hospitality and Recreation

CAREER EDUCATION GRADE THREE

ELEMENT	BASIC UNDERSTANDING
SELF AWARENESS	Attitudes toward learning tools are important in achieving individual goals.
DECISION MAKING	There are various identifiable components to the decision-making process.
ATTITUDES AND APPRECIATIONS	Community members contribute to the everyday life patterns of students and others.
CAREER AWARENESS	Local jobs belong to the larger framework of jobs in general.
ECONOMIC AWARENESS	We are part of a monetary system.
EDUCATIONAL AWARENESS	Life roles have a foundation in learned skills.
BEGINNING COMPETENCY	Tools affect lifestyle and future career choice.
EMPLOYABILITY SKILLS	Conflicts between personal and group goals can be resolved in different ways.

CAREER EDUCATION GRADE FOUR

ELEMENT	BASIC UNDERSTANDING
SELF AWARENESS	Peer group members have different strengths and weaknesses.
DECISION MAKING	Goals are an important factor in lifestyle decisions.
ATTITUDES AND APPRECIATIONS	The wage earner's job affects the home unit.
CAREER AWARENESS	Jobs can be grouped into occupational clusters.
ECONOMIC AWARENESS	The production and distribution of goods and services are part of the overall economic process.
EDUCATIONAL AWARENESS	Individual success is related to mastery of educational skills.
BEGINNING COMPETENCY	Tools and simple machines are used to measure and extend energy.
EMPLOYABILITY SKILLS	Personal and group goals are developed by full participation in group activities.

CAREER EDUCATION GRADE FIVE

ELEMENT	BASIC UNDERSTANDING
SELF AWARENESS	The worker has both rights and responsibilities.
DECISION MAKING	The decision-making process can be applied to school-related problems.
ATTITUDES AND APPRECIATIONS	Working roles have advantages and disadvantages.
CAREER AWARENESS	Different lifestyles are associated with each occupational cluster.
ECONOMIC AWARENESS	There is a law of supply and demand.
EDUCATIONAL AWARENESS	The role of the individual is related to environment and to the roles of selected adults.
BEGINNING COMPETENCY	Mass production calls for division and specialization of labor. Measurement tools can be mastered.
EMPLOYABILITY SKILLS	The school environment is related to the larger society and has similar needs for structure and order.

FOREIGN LANGUAGES

The foreign language program of the New York City public schools encompasses a wide range of foreign language offerings, specifically Chinese, French, German, Modern Greek, Italian, Hebrew, Latin, Russian, Spanish, Swahili, and Yiddish.

The emphasis in foreign language teaching is on communication. What is attempted is to teach language functionally from the very beginning and to develop the four basic language skills, namely the ability to speak with reasonable fluency, to understand a native speaker of the language, to comprehend the printed page, and to write in the foreign language within reasonable limits. The skills are developed by means of maximum use of the foreign language in the classroom and a variety of activities, such as dialogues, role playing, dramatization, situation simulation, the use of electronic aids, and many others.

Concurrent with language study there is also the attempt to understand the culture of the people whose language is studied, from the point-of-view of both cultural achievements and everyday life, customs and values.

Basic to effective foreign language teaching is the recognition of individual differences, specifically differences in learning rate, learning styles, motivations, goals, interests and needs. Modifications in curricular content, activities and approaches are necessary to accommodate these differences.

With our increased attention to the current health issues of nutrition, environmental stress, drug and alcohol abuse, overpopulation, and the inequality of health care, the concern for the health of our children is perhaps greater today than ever before.

Health education of the school-age child supplements and reinforces efforts at home and in the community. This education for health represents a major challenge to our society. While the causes of many of today's health problems are known, and to a great extent preventable, we nevertheless find that children are unwilling or unable to make the proper choices for better health.

The emphasis in health education, therefore, must be in helping the pupil-learner make informed decisions about his or her health behavior. To be successful in this regard, children should be personally involved in defining their own goals and actions, while guided by parents and teachers toward evolving an acceptable means for achieving positive health behavior within their own framework of values, beliefs, and resources.

HEALTH EDUCATION

Such changes in behavior, to be long-lasting and practiced regularly, must be a personal decision. While there are many factors that enter into the decision-making process, our primary responsibility is in providing children with a body of knowledge as a starting point. The information contained in this publication is intended to assist in this learning process. Though it provides the basic health learnings for the district schools, it should be noted that other curriculum resources are available to help the classroom teacher in planning creative approaches to the health instructional program.

Health education can have a significant role in the school curriculum if recognized as an important means for achieving general human understanding and improving the quality of life. With support from the school and community, these worthy goals can be realized.

LIBRARY MEDIA

The library media program is a service, an instructional and management system shaped by the school's philosophy, its learning objectives, the characteristics of learners, teachers' skills, the curriculum, and the organization of the students for learning. The librarian's role is the implementing of this program so that learners can develop the ability to find, generate and apply information. The program provides:

- a systematic introduction to books, films, and recordings, and instruction in finding, analyzing and using information and creating new media;
- consultation services in the use of media resources, equipment, and facilities for the improvement of instruction;
- environments which foster the effective use of media resources, both human and material;
- production of materials created to meet specific needs of students and teachers.

The Library Media Center is a laboratory where the use of all resources is purposeful, planned and integrated with classroom teaching. Its use is intended to individualize instruction.

Although "library media" is not a subject area, it is related to all content areas. There are competencies and skills to be learned through repeated use of library resources in a variety of subject contexts. The four levels of development in the use of library media are sequentially:

- learning to use tools to locate materials
- learning to select material appropriate for the purpose and type of information needed
- learning various ways in which selected material can be used most effectively
- developing critical judgment in evaluating materials with regard to their suitability, accuracy, authenticity, bias and propaganda.

A complete skills program must include all four levels in each grade. The key to the success of the program is the integration of the teaching of library skills with classroom instruction. Attempts to teach skills in isolation may lead to student frustration and seriously impair the student's ability to use libraries independently and intelligently.

MATHEMATICS

The mathematics curriculum involves the development of ideas and skills related to the areas of arithmetic, problem solving, measurement, geometry, probability, statistics, graphs, logical thinking and algebra.

The program is logical, systematic and developmental. The mathematics follows a spiral pattern in that the development of concepts and operations is repeated at increasing levels of difficulty.

In the primary grades, pupils manipulate, arrange and work with objects and other physical materials to observe relationships that can be symbolized in mathematical terms.

Beginning with collections of physical objects in the classroom, children move from non-verbalization to verbalization and symbolization. Operations are introduced with activities on sets of concrete objects. By exploration and play, children learn the number facts of arithmetic and the meaning of each operation in a concrete way.

At the same time that arithmetic concepts and skills are being developed, concepts from algebra, geometry, problem solving, and measurement are introduced. Children observe and later verbalize relations between numbers and their graphs on the number line. Fundamental operations with whole numbers, fractions, and decimals are developed gradually. Experimentation and discovery are methods used to help pupils develop understanding of important properties of our number system, properties of geometric figures, and measurement ideas - both metric and customary.

In the intermediate and junior high school years, the scope of mathematics content is broadened to include more geometry, arithmetic, probability, and algebra. The students come to understand mathematics as a unified whole by perceiving interrelationships among concepts, skills and knowledges. They learn to apply the various branches of mathematics to science, industry, career and consumer education and citizenship. They come to appreciate mathematics as an indispensable tool for living in our technological society.

MUSIC

One of the reasons for the growth of music education has been the recognition of the important role that music plays in the life of the child. Through musical experiences the child grows in self-understanding, self-awareness and self-expression. Music is an an area of the curriculum that is concerned primarily with subjective responses and affective growth.

Music as a spectator activity is rapidly diminishing. Children want more out of music than simply being a spectator on the sidelines. They want to "do" music. They want to make music with their voices; on a drum, guitar, steel drum, recorder, clarinet or any musical instrument.

Making music is an important form of individual expression; listening to music is a vital aspect of a more meaningful inner life. It is the school's responsibility to provide children with the opportunity and means of developing their natural musical talent to the utmost. They should be given the opportunity and the means to share in the making of music, alone, and in groups. They should be provided the atmosphere in which to appreciate the musical contributions of all people and to share in the wealth of the world's musical literature.

Music education must reach out to meet the needs of all children, from the serious music student to the child who wants only to enjoy music. Those for whom music has become a source of personal satisfaction become living testimonials to quality music education.

PHYSICAL EDUCATION

The goal of physical education is to provide children and youth with regular, planned, vigorous physical activities on a daily basis which will serve to promote physical fitness and cardiovascular efficiency and help to prevent heart disease. Additional benefits of physical education include socialization in a guided setting, an improved self-image, recognition of the talented and gifted student of dance, sports and gymnastics, and opportunity for the development of interests and leisure-time activities.

There is evidence that children perform better physically once they understand the concepts of movement. Therefore, movement education is essential in the elementary school grades. It is ideal for developing awareness of space, direction, pathways, levels, body parts and uses, manipulative skills, locomotor and non-locomotor skills. It offers experiences for individual performance, devoid of the constraints of group competition. In grades K-4, there is a stress on movement skills and activities such as song plays, rhythms, dance, simple stunts and games which reinforce and enhance movement concepts. In grades 5-6 movement concepts are reinforced and applied in stunts and tumbling, apparatus, team and individual sports, dance, and physical fitness. In grades 7-9 there is an even greater emphasis on participation in a variety of games, sports, dances, gymnastics, martial arts, and physical fitness which may serve students as lifetime activities and interests.

All activities are geared to both boys and girls in a coeducational setting, and are adaptable to the needs and interests of special (handicapped) students, as required by recent legislation.

It is expected that both classroom teachers in the elementary schools and physical education specialists in grades K-9 will be able to utilize the Minimum Teaching Essentials and the new curricula on which they are based.

In these times of great scientific advancement and opportunity, we are increasingly dependent upon a scientifically literate population. Our young people must be guided to explore, to discover, and to understand the scientific concepts which will be of value to people in a changing world. Science meets the needs of all pupils since it offers them endless opportunities to explore, to manipulate, and to discover as they strive to find the what, how, and why of the world around them. The pupil-oriented laboratory science program is designed to provide a variety of experiences in the form of laboratory investigations, demonstrations, trips, and projects which will appeal to all children of varying backgrounds and interests.

The design of the science program provides a set of basic experiences and instructions for which all pupils are responsible. Pupils are frequently exposed to familiar objects as a basis for study. New ideas, laboratory skills, and science vocabulary are introduced at a pace which permits easy assimilation. Understandings and interrelationships are constantly reinforced through frequent referral to previous studies. In addition, lessons and units contain concrete suggestions for stimulating a more in-depth study by providing extended enrichment studies for students whose interests and abilities warrant them.

The science content combines the two components of science instruction: process and knowledge. To accomplish this, the following approaches have been used in teachers' guides.

There has been a greater stress on the important concepts underlying each of the disciplines of physics, chemistry, biology, and earth science, and the interrelationships among them.

Laboratory investigations and experimentation have been integrated into the science lessons where student involvement would make the greatest impact. There has been a greater emphasis on critical thinking, investigation, and problem-solving as ways of learning.

SOCIAL STUDIES

The curriculum in history and the social sciences has been guided by several major considerations. These may be summarized as follows:

It emphasizes the teaching of concepts rather than the accumulation of data. The curriculum has been predicated on the same theory of learning that inspired recent changes in the teaching of science and mathematics. Instruction should focus on the development of critical thinking. The student must learn to "think as a scholar" -- to search out and deal with authentic source materials, to use techniques of inquiry and discovery, and finally, to arrive at conclusions supported by evidence.

It seeks to provide all students with the values, skills, understandings, and knowledge needed to cope with the pressing social problems of our age. We live in an era of change and challenge, a time when new and complex forces are reshaping our society. Students must recognize the sources of change and be prepared to deal effectively with issues raised by change. They must also strengthen their commitment to democratic values.

It attempts to incorporate basic concepts drawn from the disciplines of history and the social sciences. Each discipline offers a set of basic concepts variously known as "key ideas," understandings, or generalizations. These concepts provide a structure around which learning may be organized within each grade.

It attempts to develop skills and research techniques sequentially. The curriculum provides important tools for analysis and encourages the use of objective, rational methods in the study of contemporary problems.

SOCIAL STUDIES

It attempts to provide learning activities that aim at conceptualization through techniques of inquiry and discovery. Probing discussion questions, careful analysis of primary source materials, case studies of concrete social phenomena, the use of contrasting evidence to underscore man's varied social responses -- these and other strategies are used to obtain pupil interest and to develop understandings.

No one method, however, is mandated. Children learn in many different ways. The learning process justifies a variety of techniques or strategies and a wide range of teaching materials.

It emphasizes the use of multimedia resources rather than the traditional textbook. Especially useful are the audiovisual materials of instruction -- motion pictures, filmstrips, maps, globes, transparencies, 8 mm. single-concept films, programmed instruction, records, tapes, pictures and other non-book resources.

WORK STUDY SKILLS

Work study skills are those which students require in order to study, to work in class individually or in small groups, to do homework assignments and independent research projects, and to find information for purely personal needs and interests. These skills are used in all subject areas and are developed in a continuum. For example, a kindergarten child finds a picture file of farm animals and selects a cow to illustrate a story. An eighth grader uses the Readers' Guide to Periodical Literature to obtain articles on environmental pollution in N.Y.C. Both are locating and selecting information, just as a student following verbal instructions for setting up a terrarium and a student reading directions on a mathematics test are both using the skill of following directions.

In this bulletin work study skills used in all subject areas are presented for each of three levels, K-2, 3-5, 6-9. The skills are grouped in five categories: following directions; locating information; selecting, recalling, and evaluating information; organizing information; and using graphic representation and investigative tools.

In addition, there is an emphasis on applying these skills to multimedia sources of information. We live in a world rich in communications media. Students need to be guided in developing responses, both to the information received and the effects of different media on the information presented. To do this students must be given opportunities for comparison and contrast.

The library-media center provides the means for meeting this need. Classroom teachers use the expertise of school librarians in cooperatively planning assignments which incorporate library research and media skills. Teachers and librarians also work jointly in helping children learn these skills. But it is the classroom teacher who must provide the impetus and perseverance necessary for students to acquire these skills in sustained and consistent use.

It is the responsibility of all teachers to (1) provide assignments which, in total, require all the work study skills for that level (2) to analyze which specific skills are needed to complete a particular assignment and (3) to make certain those specific skills are taught as an integral part of that assignment in every subject area. For the skills which require use of library resources, librarians have the responsibility to consult with the teachers on how specific skills may be applied to the topics teachers plan to teach.

Communication Arts

LISTENING, SPEAKING, READING, WRITING GRADES K-5

Kindergarten.....29

Grade 1.....31

Grade 2.....35

Grade 3.....39

Grade 4.....43

Grade 5.....47

Grade 6.....52

COMMUNICATION ARTS

Spoken and written language is the heart of the communication arts curriculum. The purpose of all language is to communicate. The speaker must speak so as to be understood; the listener must learn the skills of effective listening; the writer must develop the skills for communicating complex ideas; the reader needs all the complex skills necessary to absorb the written ideas of others.

In terms of education, increasing effectiveness in the four language processes -- listening, speaking, reading, and writing -- is based on two important premises:

When children arrive in school they already have achieved a degree of proficiency in at least one spoken language.

This ability is the beginning and the central tool for all learning which will ensue in the student's years of schooling.

As students mature physically and psychologically, their language skills spiral upward and outward together. The more words and ideas they can utter and understand, the more words and ideas they will be able to read and write.

In the early grades, children learn to appreciate and tell stories, decipher the code of writing, make phonic-graphic correspondence, and relate stories and ideas to their own thoughts and feelings. At the same time they grow in organizing ideas, using the structure of language, increasing vocabulary and learning the basic skills of spelling and penmanship.

By the middle grades, students are ready to apply their reading skills to content areas -- science, mathematics, social studies. They grow in sophistication, listening more perceptively, expressing themselves more articulately, and writing more fully and in greater depth.

In grades 7-9 students are gradually broadening their experience in a variety of literary genres, including selections from the past and present and familiar and foreign cultures presented in a range of styles and viewpoints. At the same time they are gaining skill in specific strategies for obtaining information in the content areas. They are also acquiring critical viewing and listening skills for appreciation and evaluation of film, radio, and television. In their oral and written communication students are ready to develop style and greater clarity of expression.

Thus, the goal of the communication arts is the development of language power so that students may engage effectively in communication with others orally and in writing, react perceptively to the spoken and written word, gain information from written and recorded materials, and understand the effects of communication on thinking and behavior. Ultimately, the goal is to grow in human understanding, in sensitivity, in responsiveness, and in creativity. At all times the student must be made aware that all the processes and skills taught in the communication arts curriculum are a means to this desirable end.

The Minimum Teaching Essentials in Communication Arts is divided into three strands:

Listening and Speaking stresses perceptive listening and effective oral communication.

Reading and Literature emphasizes reading as a means of gaining pleasure and information while developing necessary processes and skills.

COMMUNICATION ARTS

Writing is presented as expressional and functional with the conventions of writing taught only as aids for the primary purpose of writing -- communication with a reader.

The division of the curriculum into these strands is merely for ease of organization. In the classroom, listening, speaking, reading literature or content area materials, and writing are integrated in the learning experience.

This approach is holistic and ongoing. While the skills and knowledge presented at a grade level constitute the minimum which should be taught before children leave that grade, it does not mean that the same skills and knowledge may not be taught earlier or later. Language develops along a continuum and teachers are responsible for learning opportunities which engage the individual child, whatever his or her point on the continuum. Throughout the years of a child's education, learning in all strands of communication arts grows in depth and complexity as the child grows in confidence and maturity.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Listening is preparatory to developing a discriminating ear for the sounds and patterns of language. *pp. 40-2 Listening to stories develops an acquaintance with literature of the past and present. *pp. 53-54 Listening to stories develops knowledge of the structure of stories. *p. 54 Listening develops skill in identifying main ideas and sequence of events, and in understanding simple cause-and-effect relations. *pp.48-50 Language is a code for expressing ideas. *p. 71 Word order conveys meaning. *p. 72 Ideas can be expressed through speaking. *p. 64 The art of clear, pleasant, audible speech is developed gradually. *p. 66 Personal narratives follow a chronological order or a simple cause-effect relationship. *pp. 66-68 Informal modes of communication (e.g., conversation, discussion, creative dramatics) can lead to a sharing of ideas and thoughts. *p. 66 Questions generally require appropriate responses using full or part sentences. *p. 18 Social amenities (such as "please" and "thank you") are important.
READING AND LITERATURE	
PLEASURE AND INFORMATION	Literature gives pleasure. *p. 30 Literature improves self-understanding. *p. 52 Literature aids in understanding the behavior and values of others. *p. 52 Illustrations aid in understanding the literature. *p. 337

*Handbook for Language Arts: Pre-K, Kindergarten, Grades One and Two (Curriculum Bulletin, 1965-66 Series, No. 8)

** Sequential Levels of Reading Skills: Pre-Kindergarten--Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Stories	A story has a set structure with a beginning, a middle and an end. *p. 52 Real-life characters are different from "make-believe" characters. *p. 52 Stories are varied in type and include the following: folktales, Bible stories, animal stories, nature stories, and stories about people, places and things. *pp.378-79 Stories have different types of settings, varying in both location and time. *p. 52
WRITING	
CREATIVE AND FUNCTIONAL	Pupil-dictated stories or group stories express feelings and describe experiences. *p.70 Drawings and paintings express reactions to literature. *p. 70 Drawings and experiences are a base for learning oral and written phrases and sentences. *p. 70
WRITING CONVENTIONS	
Handwriting	Practice in handling tools and materials develops dexterity and control. *p. 70 Writing proceeds from left to right. *p. 70 Drawings and possessions are identified by writing one's name in manuscript form. *p. 70

COMMUNICATION ARTS GRADE 1

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Meaning is obtained through listening. *p. 77 Having a reason for listening aids in comprehension.*p. 78 Listening to simple directions develops a sense of order. *p. 90 Listening to stories develops skill in identifying main ideas and details and sequential order, and in recognizing implied ideas. *p. 86. Teachers' names and classmates' names are appropriate forms of address. *p. 126 Conversation is the spontaneous informal sharing of thoughts with the teacher and other pupils. *p. 126 Telling favorite or original stories or incidents provides opportunities for sharing ideas orally. *p. 128 Formal modes of communication (announcements, prepared statements, individual and committee reports) can lead to the sharing of thoughts and ideas.*p. 127 Ideas may be expressed in different sentence patterns. *p. 153 Intonation pattern is a clue to meaning; variations in voice show feeling and emotion. *p. 80 Asking questions is a way of communicating a need. *p. 126 Creative dramatics and puppetry stretch the imagination and help to interpret experiences. *p. 129 Oral reading by teacher and pupils demonstrates how phrasing, stress, pauses, and intonation affect meaning. *pp. 117-118 Choral speaking contributes to effective interpretation of poetry and the enjoyment of language. *p. 212 Voice production and enunciation require awareness and practice. *p. 80
READING AND LITERATURE	
PLEASURE AND INFORMATION	Literature is language at its best. *p. 91 Literature evokes many different emotional responses -- humor, grief, excitement, wonder, anger. *p. 92 Libraries are the depositories of many different kinds of information and literature to be found in books and other media. *p. 94

*Handbook for Language Arts: Pre-K, Kindergarten, Grades One and Two (Curriculum Bulletin, 1965-66 Series, No.8)
**Sequential Levels of Reading Skills: Pre-Kindergarten -- Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Stories	A plot unfolds through a series of episodes leading to a logical conclusion. *p. 380 Characters behave in ways which are believable. *p. 381
Biography	Stories are written about the lives of real people. *p. 380
Poetry	The enjoyment of poetry is extended through reading aloud and listening to others recite. *p. 372
Exposition	Factual materials give useful knowledge about the world.
PROCESSES Following skills generally applicable to content areas, as well as to literature	
Comprehension	
Literal	Details in a series of connected sentences may tell about the characters, setting, time, place or plot. **p. 24 Details relevant to the main idea of a selection can be found in illustrations, titles, and captions. **p. 6 The main idea of a selection may be expressed in one or more statements. **p. 6 Sequence is the chronological order of events in narratives **p. 28
Inferential	An idea which is not directly stated must often be inferred **p. 6
Critical	Some stories or poems may be more enjoyable than others to individual pupils. Stories may be real or make believe. **p. 6
Alphabet Knowledge	Each letter of the alphabet, both upper and lower case, has a name. **p. 8
Auditory Discrimination	Words have distinguishable sounds. **p. 5
Visual Discrimination	Words have distinguishable gross and fine differences. **p. 4

COMMUNICATION ARTS GRADE 1

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Phonic Analysis	(For more detailed information on the various phonemes see the tables appended to this bulletin.) For each single consonant there is a sound-symbol relationship. Single vowel letters have short (unglided) and long (glided) sounds (phonemes). Some consonant letters may be combined with other consonant letters to form a consonant blend. Some words have similar combinations of letters and similar sounds (word families). New words can be formed by substituting new phonic elements for known elements.
Word Meaning	
Vocabulary Development	A limited number of words may be recognized by their shape (configuration) as sight words. **p. 8 Words which do not convey meaning (function words) can be recognized on sight, e.g., the, but, for. **p. 8 Words may have synonyms or antonyms. **p. 8
Contextual Clues	Word meaning may be obtained from the sense of the sentence and/or the surrounding sentences. **p. 22
Structural Analysis	A root word (free morpheme) is the base to which other words or word parts may be added. **p. 18 Words may have plural endings. **p. 16 Words may have inflected endings (s, ed, ing). **p.16 Compound words are formed by combining two root words each of which contributes to the meaning of the new word. **p. 16
WRITING	
EXPRESSIONAL AND FUNCTIONAL	Writing may record or express thoughts and needs. *p.131 Anecdotes and incidents based on individual and class experiences are the bases for written expression. *p.133

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
EXPRESSIONAL AND FUNCTIONAL	Ideas may be expressed in different sentence patterns. *p. 153 Practice in composing can be the result of cooperative and/or individual dictation. *p. 133
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	Word order may establish meaning. *p. 153
Punctuation	Every sentence begins with a capital letter and has a final punctuation mark. *p. 136
Spelling	Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences. *p. 176 The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs.
Usage Developing communication is stressed, rather than correct usage.	Variations in usage patterns are acknowledged. *p. 155
Handwriting	Manuscript writing looks very much like print. *p. 160-175 Manuscript letters, composed of upper and lower case, require only two basic strokes; a circle or parts of a circle and straight lines. *p. 160

COMMUNICATION ARTS GRADE 2

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	A variety of listening activities broadens the speaker's oral vocabulary. *p. 272 Listening develops skill in selecting main idea, comparing and contrasting details, recognizing sequential order and cause and effect relations. *pp. 189-194 Vocabulary growth enhances the ability to express ideas clearly and effectively. *p. 269 The language deemed appropriate at school may be different from the language of home and community. *p. 275 Discussion is the method by which ideas are expressed freely and attention is given to other points of view. *p. 232 Formal modes of communication (announcements, invitations, prepared statements, performed drama, individual and committee reports) can lead to the sharing of thoughts and ideas. *p. 236 Comparison and examples are used for clarification. *p.258 Oral reading requires understanding, phrasing, stress, clear enunciation, and dramatic quality. *p. 222
READING AND LITERATURE	
PLEASURE AND INFORMATION	Literature is read to broaden horizons and to gain insight into basic human values. *pp. 195-197 Literature develops critical thinking and imagination for deeper interpretation. Literature leads to greater knowledge of oneself. Literature leads to an understanding of other cultures. Literature read aloud increases pleasure and helps to interpret textual ideas. *pp. 222-223 Literature is the work of individual authors and illustrators. *p. 196
Stories	
Folk Tales	Each separate culture has its lore of tales transmitted over a long period of time. *p. 378

*Handbook for Language Arts: Pre-K, Kindergarten, Grades One and Two (Curriculum Bulletin, 1965-66 Series, No.8)
**Sequential Levels of Reading Skills: Pre-Kindergarten--Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Fairy Tales	Fairy tales are folk tales that describe beings with magical powers: fairies, giants, trolls. *p. 378
Animal Stories	Animal stories frequently employ animals who have human characteristics and often show us how to behave. *p. 379
Biography	Biographies relate the lives of real people. *p. 380
Poetry	Poems use words creatively and have a singing quality. *p. 372 Poems offer vivid descriptions of nature and human feelings.
Exposition	Factual materials give useful knowledge about the world.
PROCESSES Following skills generally applicable to content areas, as well as to literature	
Comprehension	
Literal	Details may express similarities and differences. **p.27 Titles generally relate to the main idea or subject of a selection. **p.24 The sequence of events of a reading selection may follow a logical order. **p. 28 Cause and effect relation may be clearly stated. **p. 6 The main idea of a selection may appear in various positions in a selection. **p. 24
Inferential	The main idea of a selection may be inferred from the cumulative details of that selection. **p. 30 A series of events may be predicted by reviewing sequence and cause-effect relations. **p. 6 Conclusions concerning actions, characters, outcomes, themes, and plot development may be drawn from logical inferences. **p.6

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Critical	Selections may express authors' opinions or statement of fact. **p. 34
Word Meaning	
Vocabulary Development	Content area materials are source for expanding sight vocabulary. **p.8 Homonyms are words that have the same sound but are spelled differently and have different meanings.
Contextual Clues	Words may have multiple meanings. **p. 22 Content area words are added to vocabulary study.**p. 9
Structural Analysis	An apostrophe may be used to show possession.**p. 16 A contraction is a short way of writing two words.**p. 18 An apostrophe is used to show the omission of one or more letters.**p. 16 Some inflectional endings (s, ed) may vary in sound. **p. 16
Alphabet Knowledge	The letters of the alphabet are arranged in sequence.
Phonic Analysis	(For more detailed information on the various phonemes see the tables appended to this bulletin.) For each single consonant letter there is a corresponding phoneme (sound) relationship in the initial and final position. Some consonant letters are combined to form a single sound referred to as a consonant digraph. The consonant letters r, w, and l affect the sound of immediately precedent vowels. The consonant letters c and g have both a hard and soft sound. The letter y and the endings ed and d have more than one sound. Some consonant letters and consonant blends have variant sounds (voiced and unvoiced.) Some consonant letter combinations have silent letters. Some vowel letters are placed together to represent a single sound called a digraph. Some vowel letters are placed together to blend their sounds into a new sound called a diphthong.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WRITING	There are two main types of writing: expressional and functional.
EXPRESSIONAL AND FUNCTIONAL	Expressional writing conveys one's thoughts, ideas, and feelings. *p. 240 Functional writing includes factual writing: simple letters, reports, messages. *pp. 263-6 Writing letters is a method of sending a personal communication to others. *p. 263
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	A sentence is a group of words belonging together. *pp. 273-5 Some sentences make statements; others ask questions. *p. 273
Usage	The past tense of regular verbs ends in ed, but many common verbs (see, go, buy, do, take) have irregular endings. *p. 276 Sentences begin with capital letters and end with periods or question marks. *pp. 242-246 Exclamations end with exclamation points. The pause in speaking corresponds to punctuation marks.*p.273
Spelling	Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences. *pp.289-290 The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs.
Handwriting	Manuscript writing becomes more precise and smaller in size. *p. 287

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Listening to stories develops skill in identifying main ideas and details, sequential order, understanding cause and effect relations, and drawing conclusions and predicting outcomes. *p. 20-23 Hearing may be passive and involuntary; listening is a voluntary activity. *p. 23 Language is spoken on two levels of usage -- formal and informal. Each is appropriate to a given situation. *pp. 138-139 An interview with another person is a way of obtaining information. *p. 97 Oral reading with expression enhances enjoyment and comprehension. *pp. 79-80 Choral speaking contributes toward effective interpretation of poetry and the enjoyment of language. *p. 258 Original stories are based on experiences or imagination. *p. 103 A report is tied closely to a center of individual or group interest or curriculum area. *p. 99
READING AND LITERATURE	
PLEASURE AND INFORMATION	Literature exists in print and other media. *p. 39 Literature exists in varying lengths and is often read in segments. *pp. 39-41 Literature is created in different genres, each having identifying characteristics, e.g., short story, novel, biography, drama, and poetry. *pp. 39-40 Individual authors may have written many books with similar ideas and/or locale and characters. *pp. 39-41
Stories	In addition to plot and character, stories have settings which express time-when and place-where. *p. 348
Poetry	The meaning of poetry is enhanced by an awareness of cadence, beat, and figurative language. *p. 52

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*Handbook for Language Arts: Grades Three and Four (Curriculum Bulletin, 1969-70 Series, No.6)
**Sequential Levels of Reading Skills: Pre-Kindergarten--Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Exposition	Factual materials give useful knowledge about the world.
PROCESSES Following skills generally applicable to content areas, as well as to literature	
Comprehension	
Literal	Stated details in content area materials may be isolated as sub-headings in chapters or parts of chapters.**p. 27 The main idea of a selection may be directly stated in various locations within the selection. ** p.24 Clue words such as first, next, and last indicate sequential order of events. ** p.28 Clue words such as because and as signal cause and effect relations. ** p.29
Irferential	Cause and effect relations not directly stated may be determined. ** p.31 Sequential order is a factor in predicting outcomes and drawing conclusions. ** p.28
Critical	Experiential background and knowledge affect evaluation of written materials. ** p.34
Word Meaning	
Vocabulary Development	Vocabulary also expands through including content area words. ** p.9
Contextual Clues	Word meaning may be found from the context in a direct statement, through a synonym or through apposition. ** p.22
Structural Analysis	A prefix comes before a root word and changes the meaning of the word. ** p.18 A suffix comes at the end of a root word and changes the meaning of the word. ** p.18 Comparatives and superlatives change the meanings of adjectives, (er, est, more, most). ** P.18

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Alphabet Knowledge	Letters of the alphabet have both a manuscript and cursive form. **p. 8
Phonic Analysis	(For detailed information on the various phonemes see the tables appended to this bulletin.)
WRITING	
CREATIVE AND FUNCTIONAL	Careful observation of objects, places, people forms the basis for good writing. *p. 110 The realm of the child's private and fantasy world may become the subject for prose and poetry. Factual writing is necessary to provide records. *p. 105 Logical development of ideas enables one to think and write clearly. *p.104 Good writing requires revision. *P. 299
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	A simple sentence is a group of words belonging together and conveying meaning. *p. 135
Usage	The subject of a sentence agrees with the predicate. *p. 140
Punctuation	Basic marks of punctuation: the comma, period, question mark, and exclamation point, bring more clarity to the written word. *pp. 134-135

Spelling

Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences.*p.162
The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs.
Words may be spelled according to a common structural element.
Regular plurals are formed by adding s.*p. 334
Regularly inflected verbs add s, ing, and ed. *p. 336
Words ending in silent e drop the e before adding ed and ing.
An apostrophe shows the omission of a letter or letters in a contraction. *p. 335

Handwriting

Letters of the alphabet have both upper and lower case in manuscript and cursive forms. *p. 155

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Listening to various forms of communications reinforces comprehension. Role-playing serves a variety of functions: understanding language and situations, expressing feelings, and illustrating ideas. *p. 264 Telephone conversation has specific conventions of answering: identification, clear message-giving, and brevity *251 Reporting involves the use of an inviting opening sentence, vivid details and examples, organization, and clear delivery, and may be made by individuals or groups. *254 Memorization and recitation of poetry stimulate enjoyment and sensitivity to language and its patterns. *p.210-221
READING AND LITERATURE	
PLEASURE AND INFORMATION	
Novels	Well-developed characterization depends on the degree to which characters are true to life. *p. 348 Historical fiction deals with historical events and real or fictional characters. *p.345
Biography	Biographies may provide insights into the historical period *347
Poetry	In poetry the poet varies the sequence for emphasis. *p. 350 Poetry makes wide use of comparisons (metaphors and similes) *p.350 Poetry uses repetition of sounds (assonance, alliteration, rhyme). *p. 350 Poetry employs words where the meaning is suggested by the sound (onomatopeia). *p. 350 Free verse is poetry without regular rhyme or meter. *p. 351 A popular form of unrhymed poetry is Japanese Haiku, a poem of seventeen syllables divided into three lines of five, seven, and five syllables. *p.294

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Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Exposition	Factual materials give useful knowledge about the world.
PROCESSES Following skills generally applicable to content areas as well as to literature	
Comprehension	
Literal	Details may be used to support a point. **p. 26
Inferential	Details may be inferred from the context. **p. 31 Characters can be analyzed by their actions. **p. 30 Outcomes may be predicted based upon stated fact. **p. 30
Critical	Personal experiences may be related to a narrative or expository selection. **p. 34 Fact and opinion may be distinguished based upon clue words such as: in my opinion and I believe that. **p. 34
Word Meaning	
Vocabulary Development	Vocabulary also expands through including content area words *9 Words evoke emotional and sensory responses. **p. 9
Contextual Clues	Word meaning may be found contextually through comparison and/or contrast. **p. 22
Structural Analysis	Words of more than one syllable can be divided between the syllables. **p. 20
Phonic Analysis Should have been completed by this grade except for individual students who need reinforcement	(For detailed information on the various phonemes see the tables appended to this bulletin.)

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WRITING	
CREATIVE AND FUNCTIONAL	A paragraph is a set of sentences of related ideas. In expository paragraphs there are generally a main idea (implied or stated) and supporting ideas. *p.272 An opening sentence is important in introducing the subject and arousing the reader's interest. *p. 273 Writing stories or reporting an event makes use of chronological order. *p. 274 Factual writing involves organizing and writing records, signs, labels, forms, directions, notes, reports. *pp. 269-70,80 First hand and vicarious experiences provide the material for journals, letters, and anecdotes. *pp. 272-3 Tales of fantasy, myths, fables or dreams may be the models for imaginative writing. Revision is a means of improving one's original writing. *pp. 299-301
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	Simple sentences may be expanded to form compound sentences joined with and or but. *p. 306
Punctuation	A comma is usually needed before and or but when used to join compound sentences. *p. 306
Usage	To improve style, pronouns may be substituted for nouns. *p.341 A pronoun agrees with its antecedenc in number and gender.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Spelling	Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences. *p.368 The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs. Some plurals are formed by adding s, es, changing y to i and adding es. *p. 327 Some word roots change when plurals are formed (irregular plurals such as foot, feet). A word ending in a single consonant following a single vowel doubles the consonant for an inflectional ending (run, running). *p. 229 A word of more than one syllable can be divided between its syllables. *p. 324 Common abbreviations exist for days, months, titles, and measurements.
Handwriting	Cursive writing is the conventional form of script in which letters are joined and words separated. *pp. 316-20

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Listening is a means of appreciating the mood of a selection***12 Listening critically is a means of evaluating content of written materials. ***p. 11 Listening to various forms of written communications reinforces comprehension. ***p. 155 Effective discussion has purpose, direction, and opportunities for participation by all. ***p. 17 Volume, pitch, rate, and quality of voice are appropriately varied to occasion. ***p. 7 There are standards for pronunciation and articulation suitable for different occasions. ***p. 8 Choral speaking contributes toward effective interpretation of poetry and the enjoyment of language.
READING AND LITERATURE	
PLEASURE AND INFORMATION	Common emotions and aspirations unite all people. *p. 224 Cultural differences exist among people; these should be understood and respected. *p. 155
Novel, Short Story, Myths	The plot may develop in a straightforward chronological manner. *p. 241 The hero and the villain of the piece of literature are identified by their characteristics. *p. 241 The setting (time and place) of the story is important in its relation to the story. *p. 241 Characters' traits and actions may be evaluated in terms of ethical values relating to the students' own lives.*p.222 Characters' strengths and weaknesses may cause them to overcome or succumb to obstacles. The motivation for characters' behavior must be sought in terms of environment, personality, and society. *p. 223 The myths of all countries relate their histories, customs, and beliefs. *p. 309

Handbook for English Language Arts: Grades 5--12
*Reading and Literature (Curriculum Bulletin, 1967-68 Series, No.10)
***Speech and Composition (Curriculum Bulletin, 1969-70 Series, No.21)
****Language Strand (Curriculum Bulletin, 1974-75 Series, No. 4)

Page references provide amplification or identify the source of a particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Drama	A play contains dialogue to interpret character and develop the components of plot. *p. 310
Biography	Biographies and autobiographies give insights into the subjects' lives and personalities, and may serve as role models. *p. 261
Poetry	Poetry employs words with musical quality. *p. 242 Onomatopoeia (sound of a word suggesting meaning) and alliteration (repetition of initial sounds) enhance the meaning and musical qualities of poetry. *p. 252
Newspapers, Journals, Speeches	Personal accounts supply authentic flavor.
PROCESSES Following skills generally applicable to content areas, as well as to literature	
Comprehension	
Literal	Knowledge of literal meaning is applied to increasingly more difficult content and concepts. **p.25
Inferential	The literal meaning of a sentence can be expanded to include an extended meaning. **p. 31 Related ideas may be used to make generalizations. **p. 31 Outcomes may be predicted based upon facts not directly stated. **p. 30
Critical	Recognition of an author's purpose aids comprehension and evaluation. **p. 35
	(Generally, these skills are integrated with reading for pleasure and information).

**Sequential Levels of Reading Skills: Pre-Kindergarten--Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Word Meaning	
Vocabulary Development	Vocabulary also expands through including content area words.**p.9 Language is constantly growing and changing. **p. 9 Many words have a specific history that can be traced back to their origins. **p. 9 New words are invented for new discoveries, ideas, and/or situations. **p. 9
Contextual Clues	Context aids in understanding words in technical and literary material. **p. 23
Structural Analysis	Dividing words into syllables may aid in decoding unfamilar words. **p. 21
WRITING	
CREATIVE AND FUNCTIONAL	Appropriately selected words provide clarity, vividness, and precision in context. ***p. 171 Variety in the use of language makes writing more interesting. Varied sentence types provide interest and fluency. ***p.172 The paragraph contains an orderly and unified presentation of thought. ***p. 173 The basic paragraph requires writing of a moderate length. Paragraphs may be descriptive, narrative, persuasive or expository. Individual statements on a topic must be related to each other. ***p. 173
Forms	The personal letter form includes the date, salutation, closing, and signature. ***p. 173 The envelope shows the complete return address and full name and address (including zip code) of the recipient.***173

COMMUNICATION ARTS GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	There are different kinds of sentences: statements, questions, commands or requests, and exclamations. ***p. 172 Simple sentences can be joined by using such coordinating linking words as and, but and or.
Usage	Comparatives and superlatives of regular adjectives are formed by adding er and est. ****p. 15 Auxiliary verbs aid in forming tenses.
Punctuation	The sentence is to be distinguished from word groups and fragments and is punctuated by an initial capital letter and a final period, question mark, or exclamation point.****17 The hyphen is used to separate parts of a word at the end of a line. The apostrophe is used to show possession. ****p. 268
Spelling	Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences. *p.215 The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs. There are certain words which have a regular spelling pattern.****205 Certain types of spelling errors persist because of reversals, omission of silent letters, mispronunciation, lack of emphasis on final sound. ****p.209

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING AND SPEAKING	Listening to various communications reinforces comprehension. Listening critically is a means of evaluating content. ***p.23 Listening for essential points will help in focusing on directions. ***p. 44 When speaking, the intonation and rising and falling of the voice have a definite pattern. ***p. 19 Short talks before a live audience help to build poise and confidence. ***p. 25 Improvising scenes from a play gives insight into character and motivation. ***p. 51 Performing a role in a play demands skills such as pantomime, body action, and appropriate voice modulation and effect. Dialect and standard structures are compared and understood. ***p. 28
READING AND LITERATURE	
PLEASURE AND INFORMATION	
Short Story, Novel, Drama	The elements of plot can be identified. *p. 241 Characters in books may reflect the effects of their good or bad environment. *p. 222 Characters in books help us to know ourselves and others more accurately, develop a set of personal values, make judgments independently, and take action accordingly. *p.250
Poetry	The emotional impact of poetry is heightened by the type of rhythm employed. *p. 254 The rhyme scheme follows a regular or irregular pattern. *p257 The lines of a poem may follow a regular stanza form such as the couplet or quatrain. *p. 258 Poetry is made more vivid through the frequent use of simile and metaphor. *p. 242 The choice of words and the sounds of the lines convey mood.*259

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****Language Strand (Curriculum Bulletin, 1974-75 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Essay	The personal essay may express the author's sense of humor, way of thinking, or preferences. *p. 244
Newspapers, Journals, Speeches	Good reporting has authenticity and objectivity.
PROCESSES Following skills generally applicable to content areas, as well as to literature	
Comprehension	
Literal	Knowledge of literal meaning is applied to more difficult content and concepts. **p. 25
Inferential	Sequential order may be inferred using logical reasoning and by placing details in their order of occurrence. **p. 29 Conclusions are drawn as a result of inductive and/or deductive reasoning applied to a paragraph or selection. **p. 30 Recognition of cause and effect relationships serves as an aid in drawing conclusions and predicting outcomes. **p. 31
Critical	Recognition of an author's point of view aids in understanding a selection. ** p. 35 Materials can be evaluated for validity and accuracy. **p. 35 (Generally these skills are integrated with reading for pleasure and information).
Word Meaning	
Vocabulary Development	Many English words are derivatives of other languages. ***p. 174 **p. 9
Contextual Clues	Punctuation may provide clues to word meaning, e.g., dash, parentheses, commas. **p. 23 Context clues aid in understanding words in technical and literary material. ** p. 23

**Sequential Levels of Reading Skills: Pre-Kindergarten--Grade 12 (Curriculum Bulletin, 1967-68 Series, No. 4)

Page references provide amplification or identify the source of the particular item and show related materials.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Structural Analysis	Identifying parts of a word can aid in defining the word**p. 21
WRITING	
CREATIVE AND FUNCTIONAL	Writing may be enriched by searching for vivid and precise words, using synonyms, antonyms, descriptive words and action words. ***p. 174 Words may have interesting historical backgrounds which give them special connotative value. ***p. 174 A narrative paragraph creates a sense of unity by telling of a single significant piece of action. ***p. 176 The descriptive paragraph achieves sensory effects through effective and selective words. ***p. 176 The simple expository paragraph of the "how-to-do" or "how to make" variety uses sequential order. ***p. 176 Letters to friends and family are an excellent way to communicate personal feelings and experience. ***p. 177
WRITING CONVENTIONS Taught as needed in actual writing, NOT as isolated skills	
Sentence Sense	Sentence kernels (basic sentences - simple subject and predicate) can be joined by using such subordinating linking words as when, as, since, although, and because. There are basic sentence patterns, among them: S-V (Subject - Verb) S-V-O (Subject - Verb - Object) ****p. 18

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Usage	Don't and doesn't agree with their subjects. The double negative construction, in which two negative words are used when one is sufficient, is considered non-standard form.
Punctuation	Use capitals for proper names, initials and abbreviations, and first word in salutation and closing of a letter. A comma is used before and, but, or, nor, for, yet when they join simple sentences. Capital letters are used for titles with a person's name, key words in titles of books, films, stories, poems. Commas are used for words in a series.
Spelling	Spelling Words List C comprises words most frequently used in student writing for that grade; new words are added from reading, content areas, and experiences. *p.206 The list is further supplemented by each student's individual bank of spelling words based on reading and writing needs. Certain spelling errors persist because of confusion of homonyms, omission of silent letters, failure to double consonants, incorrect vowels, addition of letters.****209
Proofreading	Proofreading is a complex skill that involves the recognition of errors and the ability to correct them.

ENGLISH AS A SECOND LANGUAGE

A successful method of teaching English to non-native speakers is through the audio-lingual approach. The pupils' first contact with the language is listening. They next practice what they have heard by repetition of language patterns and a variety of oral drills. At later stages, reading and then writing are introduced. Grade level curriculum specifies reading and writing objectives to be mastered by native speakers. Teachers of English as a second language (ESL) should know the objectives to insure that non-native speakers will also achieve these competencies.

The content of the curriculum at any level will depend on several factors: the age of the pupils, the duration of the ESL program, and the second-language ability of the students. There are usually three levels of instruction: beginning, intermediate, and advanced. Levels of instruction are necessary to insure that the language objectives are introduced in a systematic fashion. The reading, writing, and auditory objectives are also integrated into these divided levels and are arranged in a hierarchy of increasing difficulty. Teachers should review the scope and sequence in language arts K-9 in this bulletin to determine the specific skills and knowledge necessary for ESL students at various grade levels. Vocabulary will vary according to the sophistication and grade level of the ESL students. It is important to note that some students in grade level 6 may be beginning ESL students while others are intermediate or advanced.

A variety of topics must be mastered by all students. They include greetings, weather, emergency situations, etc. For example, students in all grade levels must master the patterns. My name is_____. I live at_____.

The following ESL scope and sequence will outline the topics, skills, and knowledge that should be taught. For specific examples of lesson plans and methodology, consult the Board of Education bulletins Handbook for Language Arts Pre-K-2 and Teaching English as a Second Language in the Middle Grades. Lessons in science, math, social studies and music may be found in the experimental bulletin Teaching English as a Second Language in The Elementary Schools.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
STRUCTURAL ANALYSIS	
Articles	An and the, as used preceding initial sounds, are introduced. An and a, as used preceding consonant and vowel sounds, are introduced.
Nouns	Nouns can be singular or plural, e.g., bank/banks, boy/boys, glass/glasses. Some nouns are irregular, e.g., man/men; child/children.
Verbs	Am, is, are and regular verbs are used in the present tense. Was and were and regular ed verbs in all terminal sound categories, e.g., walked, played, wanted, are past tense verbs. To be going to_____ is a future tense pattern.
Subject Pronouns	I, you, he, she, etc. replace common and proper nouns in subject positions.
Demonstratives	This/these and that/those are used in declarative and interrogative sentences.
Object Pronouns	Me, him, her, it, them, us, you replace common and proper nouns in object positions.
Possessive Adjectives	My, your, his, her, its, our, their replace common and proper possessive singular and plural nouns in describing ownership.
Possessive Pronouns	Mine, yours, his, hers, its, our, theirs replace common and proper possessive nouns.
Questions	Do and does are used to ask and answer yes/no questions. Who, what, when, where, and why are used in information questions with do, does, and to be.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
STRUCTURAL ANALYSIS (continued)	
The Negative	The negative is formed with the auxiliaries *do* and *does* and the verb *to be*.
READING	
Alphabet	The same letters may have different sounds.
The Sentence	Sentences have a "doer" and a "receiver." Sentences have meaning.
Paragraph	Paragraphs have main ideas and supporting ideas.
Punctuation	Certain marks of punctuation are essential to enhance better reading comprehension. The period (.) The comma (,) The question mark (?)
Vocabulary	Some words are similar in two languages. Student level and experience will determine the vocabulary taught.
AURAL-ORAL *pp. 23-24	
Directions	Teacher directions to students are important.
Illustrations	Identification of a picture from an oral word, oral action, phrase, oral descriptive sentence, brief oral paragraph demonstrates listening comprehension.
Consonants	Identification of consonants and consonant blends in initial, medial and terminal positions from oral words demonstrates that students hear these sounds.
Vowels	Identification of vowels in initial, medial and terminal positions from oral words demonstrates that students hear these sounds.

*TEACHING ENGLISH AS A SECOND LANGUAGE IN THE MIDDLE GRADES Curriculum Bulletin No. 7

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
AURAL-ORAL (continued)	
Sequencing	Listing the sequence of events from an oral paragraph demonstrates that there is logical sequence of action and events.
Sentence Completion	Identification of a phrase which best completes an unfinished oral statement demonstrates knowledge of syntax.
WRITING	In grades 1-2 manuscript writing (printing) of the alphabet, familiar names, basic vocabulary, and in grades 3-6, cursive writing of alphabet, one-word vocabulary, phrases and sentences are motor skills. Single words, sentences controlled orally and read with comprehension with attention to left-to-right movement, punctuation, spacing, and letter forms are copying skills. Word, phrase, simple sentence writing of material controlled in oral production and the writing of dictated material within a student's auditory comprehension ability are dictation skills. Periods or question marks are terminal punctuation. A sentence begins with a capital letter.
SPELLING	There is no definite spelling list. However, the students should be held responsible for the spelling of the words learned in class. An oral dictation of such words should be included in weekly tests. Consult specific grade spelling list.

INTERMEDIATE ESL

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
STRUCTURAL ANALYSIS	
Nouns	Nouns can be count or mass. They are often used with HOW MANY and HOW MUCH, in both questions and statements. Proper, common and collective nouns are used in both questions and statements. Nouns can show possession, e.g., John's.
Verbs	Regular and irregular past-tense forms tell about past events and actions. Progressive (past and present) tenses use present participles. The modals: should, would, could, may, might, shall, will, etc., can alter the meaning of verbs.
Adjectives	Adjectives describe and compare nouns and pronouns, e.g., simple, comparative - as...as, more...than, fewer...than, superlative - est, most...
Prepositions	In, on, at, near, off, by, under, etc. commonly used in phrases.
Pronouns	Indefinite pronouns replace nouns, e.g., some; any; every; with - body and - one.
Adverbs	Some adverbs are adverbs of place, e.g., there, here, far, near. Some adverbs are adverbs of time, e.g., then, now, before, after.
Expletives	There is, there are, there was, there were are used in both statements and questions.
Negative	The negative is used in both statements and questions.
Questions	Did is used with question words, e.g., how much? how many? which? and whose? Question words how, who, what, where, when, whose, and why are used with different tenses.

INTERMEDIATE ESL

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
READING	
Phonics	Use the same symbols that are used in Webster's dictionary to assist students in pronunciation.
Selections	All difficult or unfamiliar points of grammar should be taught as encountered in reading selections, and the students should be expected to remember them; e.g., the difference between hanged and hung; dragged and drug, etc.
Punctuation	Certain marks of punctuation are essential in order to enhance better comprehension of reading selections. The period (.) The comma (,) - Example: "The President," said the governor, "had the right to veto the bill." The President said the governor had the right to veto the bill. Semi-colon (;) Quotation marks (") Example: The "eye" saw the airplane through the clouds. (Eye is in quotes because it refers to radar, etc.)
Vocabulary	Development of vocabulary depends on the sophistication and experience of the students.
Comprehension (within time limits)	Culling information from reading selections under a time pressure helps in developing speed.

INTERMEDIATE ESL

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WRITING	Commas are used to enhance meaning. Sentence and paragraph writing of student ideas, emotional reaction, and creativity are developed through experience charts and guided writing activities. Guided written responses to sequential, logical questions over a single topic create a written paragraph. Writing on a familiar topic, which is controlled orally by the teacher, assists students in generating written compositions.
AURAL-ORAL	Continue using the drilling procedures.
Sentence and Paragraph Completion	Identification of a phrase which best completes an unfinished oral statement, oral paragraph or oral story demonstrates comprehension of the statement, paragraph or story.

FOREIGN LANGUAGES (FLES) GRADES 3-4-5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LANGUAGE ACQUISITION IN FRENCH, GERMAN, HEBREW, ITALIAN, AND SPANISH	
Listening	New utterances are modeled so that sounds and sound patterns can be distinguished and a linkage between sound and meaning established. Commands, questions and answers, chain drills, dialogues, songs, and taped material are used for ear training and comprehension of language patterns.
Speaking	The sound system of a language and proper pronunciation are acquired by means of imitation and mimicry concurrently with the acquisition of language patterns. Devices for habituation of language patterns are memorization, choral repetitions and drills. Freer manipulation of vocabulary and structures is facilitated by modification of dialogues, role playing, and situation simulations. Oral activities are supported by visuals, flannel board cut-outs, transparencies and puppets.
Reading	Actual reading is preceded by a reading readiness stage during which objects in the classroom, pictures, and maps are labeled. Reading begins with language patterns mastered in the pre-reading stage. Reading progresses to new patterns.
Writing	Writing begins with the labeling of objects and pictures during the pre-reading stage.

FOREIGN LANGUAGES (FLES) GRADES 3-4-5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Writing is practiced by copying language patterns previously mastered, writing from dictation and making picture dictionaries.
Grammatical Structure	Model sentences show grammatical structures. Generalizations of grammatical structures are applied to new linguistic situations.
Cultural Information	The geography of the country where the language is spoken, the customs, holidays, school life, recreations, and values of the people are topics of cultural information. Maps, pictures, transparencies, films, records, and tapes are aids for conveying cultural information. A corner of the classroom is set aside as an exhibit area for pictures, scrapbooks, and models.
Conversational Themes	The school, the classroom, the family, occupations, food, and meals, going marketing, visiting the park or zoo, recreation, and sports are conversational themes.

CHILD DEVELOPMENT FOCUS

CHILDREN'S NEEDS

Basic needs, the same for all children, are the drives that influence behavior. These needs include:

1. NEED TO BE VALUED
   A child's self-image has top priority. A child can't be "somebody" unless the child is "somebody" to someone else. Self-image must be reflected in the eyes and actions of those the child loves and values. All children must be valued for who they are, where they come from, and what they bring with them from their culture, language, desires, and expectations.

2. NEED TO DO
   Children learn by using all their senses to explore, discover, and form judgments about the things in their world.

3. NEED TO SHARE WITH PEOPLE THEY TRUST AND BE TRUSTED TO SHARE
   Children need adults who care, who can guide the children's discovery into mutually respected action, who inspire and develop competence and confidence.

4. NEED TO BE GIVEN A CHANCE TO GROW AT HIS OR HER RATE IN HIS OR HER OWN WAY
   Growth for children has many dimensions - social, emotional, physical, and intellectual. Growth is uneven and highly individual. All children do not reach the same level of growth at the same age, nor does a child grow in the same way in all areas.

PRINCIPLES OF GROWTH & DEVELOPMENT

Basic principles that enable persons to guide children with a degree of assurance include:

1. DIFFERENTIATION
   Development proceeds from simple to complex. In both structure and activity, development is gradual in the direction of complexity and variety. Differentiated structures and functions become organized in new and more inclusive patterns.

2. DISCONTINUITY OF GROWTH RATE
   Development is never uniform or all at the same time. Various parts and systems grow at various rates at a different time. Growth shows characteristic spurts or peaks and then slows down to periods of relative latency.

3. INTERRELATEDNESS OF GROWTH
   Every aspect of the child's life affects every other aspect. The physical and social environment as well as factors of personality and physical development affect academic achievement.

4. DIVERSITY OF GROWTH
   No two children are exactly alike. No two grow quite alike. Wide differences exist among children of the same age, the same family, and from the same community. Each child has his or her unique growth style.

THE TEACHING ADULT SHOULD BE FAMILIAR WITH THE LEVELS OF GROWTH IN EACH AREA, WHICH MAY OR MAY NOT CORRESPOND WITH THE CHRONOLOGICAL AGE OF EACH CHILD.

CHILD DEVELOPMENT FOCUS GRADES 3 - 5

OVERVIEW: Generally includes children eight to ten years of age. Physical growth is slow and steady but social relationships and awareness of self and others are heightened. Feelings of adequacy affected by child's overall experiences in the physical, intellectual, and social spheres.

PHYSICAL	SOCIO-EMOTIONAL	INTELLECTUAL
Eight-Year-Old • Growth is still slow and steady; (arms lengthening, hands growing larger). Permanent teeth are replacing "baby teeth." • Eyes are ready for both near and far vision; (near-sightedness may develop this year). • Interest grows in games requiring coordination of small muscles (hitting moving target, shooting marbles, catching with one hand, etc.). • Ability to write is progressing; however, fine muscle work may still be difficult and taxing.	**Eight-Year-Old** • Prefers to work and play with others; begins to identify with group responsibilities and purposes; accepts simple rules and directions. Begins to exhibit a feeling of competition. • Is becoming more selective in choice of friends. Responds to peers in activities, dress, and ideas. • Shows allegiance to peer group rather than to the adult where there is conflict. • Is usually alert, friendly, and interested in people. He/she is often careless, noisy, and argumentative, (but not in an angry manner). • Is eager and enthusiastic about many tasks. Often tries to express ideas and to take part in activities which are beyond his or her capacity; shows more self-confidence.	**Eight-Year-Old** Establishes own methods of employing fundamental skills in language arts and mathematics. Is beginning to develop a broader understanding of space and time. • Is becoming more adept at defining problems and developing logical patterns of problem-solving. Is more capable of critical judgment. Weighs facts, attempts an adequate appraisal of them, and shows ability to utilize them. • Exhibits ability to distinguish fact from fiction. • Has greater capacity to accept criticism and to evaluate self-effectiveness. • Exhibits great curiosity and interest in immediate surroundings and the world: material and social.

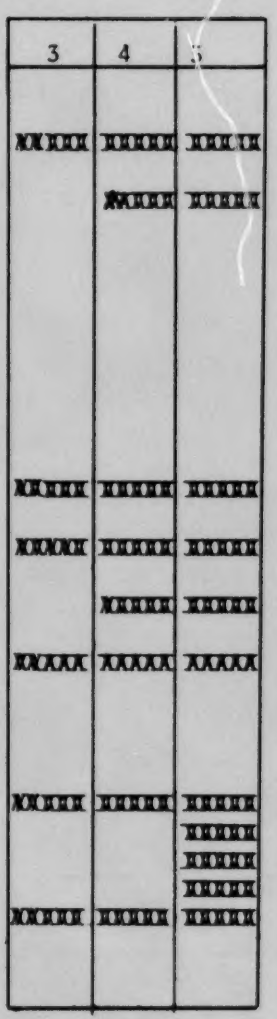
PHYSICAL	SOCIO-EMOTIONAL	INTELLECTUAL
	Eight-Year-Old (Cont.) . Has growing awareness of self and others. . In school life he/she is more socially oriented than academic.	
Nine-Year-Old . Slow, steady growth continues; displays even rate of growth in height and increase in weight. Girls forge further ahead; some children reach the plateau preceding growth spurt of pre-adolescence. . Exhibits increased skill in the use of fine muscles; continues to need activities to develop large muscles. Is proficient in the use of tools, as is evident in the details of his or her finished products. . Lungs, digestive and circulatory systems are almost mature. The heart especially is subject to strain. Teeth may need straightening; first and second bicuspids are appearing.	Nine-Year-Old . Group and club enthusiasm is noticeable, with hostility toward other groups; clubs and exclusion from clubs are both short-lived. . Is becoming aware of responsibility to others. Exhibits increased ability to evaluate self and others. Much arguing over fairness in games. . Has an emotional and intellectual interest in punishments, privileges, rules and procedures, particularly at school and in club life. . Is capable of devoting relatively long periods of time to a given task. Attacks a problem and keeps right on working at it. A nine-year-old feels he must answer to self as well as to others.	Nine-Year-Old . Has made definite growth in ability to do some independent critical thinking. . Interested in perfecting skills; will do the same task over and over again. . Is interested in the mechanics of things; what things are made of and how they operate. Tends to be more exacting in collecting, identifying, and classifying objects. . Interest in special fields increases - (science, the arts, literature, sports, etc.). May limit activities to one area.

PHYSICAL	SOCIO-EMOTIONAL	INTELLECTUAL
Nine-Year-Old (Cont.) · Eyes are almost adult size; ready for near work with less strain. Exhibits ability to adjust eyes for both near and far vision without undue strain. Eye-hand coordination is good; hands are capable of crafts and shop work. · Displays increased skill in motor coordination. Enjoys exhibiting motor skills. Often works and plays to peak of capacity.	Nine-Year-Old (Cont.) · Is capable of more independence when away from family. Is aware of differences between standards of family and friends. · Decisive, responsible, dependable, reasonable, strong sense of right and wrong. Much time spent in talk and discussion; often outspoken and critical of adults; shows more inner control of behavior.	Nine-Year-Old (Cont.) · Likes to make plans and looks ahead; is increasing in ability to budget time. · Develops interests in a wider variety of areas involving the media - comedians, news broadcasters, drama in general; interest in fantasy declines.
Ten-Year-Old · Girls are more mature physically than boys their own age. · Awkwardness and restlessness are common as a result of rapid and uneven growth.	Ten-Year-Old · Is generally easygoing; cries very seldom, but anger may be immediate and violent. · Has a real sense of humor and a love of something funny. Tries to be humorous. Leans toward practical jokes and punning.	Ten-Year-Old · Establishes own methods of employing fundamental skills. · Is beginning to develop a broader understanding of space and time. · Is able to discuss problems, to see different sides of questions. · Exercises greater objectivity in judgment.

PHYSICAL	SOCIO-EMOTIONAL	INTELLECTUAL
Ten-Year-Old (Cont.) . Secondary sex characteristics begin to develop. . Approximately half the permanent teeth are developed. . Stabilization occurs in the fine motor area.	Ten-Year-Old (Cont.) . Has a fairly critical sense of justice; is cognizant of partialities, and frequently surprises all with the judiciousness of observations. . Is open to ideas of social justice and social welfare. . Is capable of loyalties and of idol worship, and can inspire same in schoolmates without question. May believe one hundred percent in what has just been heard on a radio program or seen on television. . Is moved one moment by a desire for the comfort of belonging, and the next by a strong urge for competition. A desire to show off and receive acclaim in the eyes of peers prompts much classroom competition and vociferous criticism of others. Much of learning comes from association with peers. Is eager for group approval and belonging. . More accepting of self and others.	Ten-Year-Old (Cont.) . Interested in other people's ideas. . Insights may be more mature. . May have greater capacity to accept criticism and to evaluate self.

WORK STUDY SKILLS GRADES 3-5
ALL SUBJECT AREAS

Students acquire skills through using them consistently in assignments relating to the curriculum in each subject area. For skills which require use of library resources, librarians cooperate with classroom teachers on how specific skills may be applied to topics teachers plan to teach.



FOLLOWING DIRECTIONS

Independently following printed/oral directions (involving 3 or more steps) in practice materials, homework assignments

Using pattern for following written directions:
- Reading title
- Reading for overview
- Rereading for specific steps
- Carrying out steps
- Checking for correct completion of steps

LOCATING INFORMATION

Using print and other media and resource persons as sources of information*

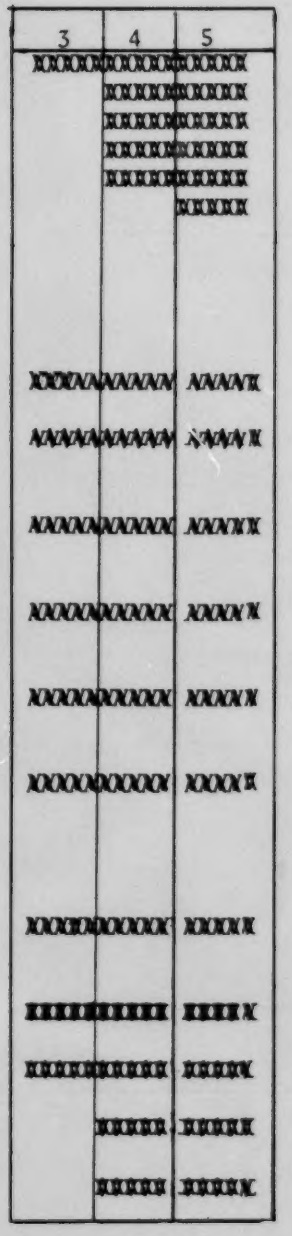
Scan for specific information; Skim for overview or superficial review

Selecting key words for topical information; interpreting research questions

Using classroom and school libraries
- locating information appropriate for level

Using reference sources*
- (Alphabetizing to second letter; third letter)
  - Dictionary
  - Encyclopedia
  - Almanac
  - Atlas
  - Telephone Directory

* Librarians will help determine which sources are most appropriate for the kind of information wanted.



Using format in print materials
- Table of Contents
- Copyright date
- Glossary
- Indices
- Chapter, topic and subtopic heads
- Bibliography

SELECTING, RECALLING, EVALUATING INFORMATION

Using more complex criteria for selecting best oral/written response

Reinforcing and extending recall of information presented by speakers and other-than-print media

Reinforcing and extending recall of information from short printed selections

Reinforcing and extending skill in selecting or integrating relevant information from more than one print source

Reinforcing and extending skill in integrating information on the same topic from sources in more than one media

Verifying information through investigation

ORGANIZING INFORMATION

Classifying information by contrasting characteristics, e.g., industrial or agricultural, urban or rural, acid or base

Determining categories for classifying a variety of information

Classifying by sequence, chronology, cause and effect, or pattern

Analyzing and synthesizing data collected by scientists' tools

Keeping records of investigations as a basis for inferring conclusions

WORK STUDY SKILLS CHART GRADES 3-5

	3	4	5
Organizing information in chart and graph forms	XXXXXX	XXXXXX	XXXXXX
Taking notes from oral/print and other media sources	XXXXXX	XXXXXX	XXXXXX
Arranging and/or presenting material according to given format	XXXXXX	XXXXXX	XXXXXX
Using outline technique in writing simple summaries			
Main categories: I. II. III.			
Main categories and first level subcategories: I. A. B.		XXXXXX	XXXXXX
Awareness of need to quote exact words of printed or spoken material		XXXXXX	XXXXXX
Preparation of limited bibliography for assigned reports		XXXXXX	XXXXXX
USING GRAPHIC REPRESENTATION AND INVESTIGATIVE TOOLS			
Recognizing that maps show relationships, e.g., political boundaries, elevations, places, numbers of people or things	XXXXXX	XXXXXX	XXXXXX
Locating points on printed and hand drawn-maps	XXXXXX	XXXXXX	XXXXXX
Awareness of map scale; estimating distance		XXXXXX	XXXXXX
Awareness of various kinds of maps, e.g., physical-political, products, climate, outer space, polar projection, population		XXXXXX	XXXXXX
Using latitude and longitude, parallel and meridian for locating places; understanding need for demarcation of time zones and identifying time zones			XXXXXX
Making and interpreting bar, line, pie graphs, and pictographs	XXXXXX	XXXXXX	XXXXXX
Manipulating equipment in the investigation of a problem or in the examination of things beyond human capacity, e.g., microscope	XXXXXX	XXXXXX	XXXXXX

Grade 3

MINIMUM TEACHING ESSENTIALS

Art.....74

Health Education.....80

Library Media.....82

Mathematics.....84

Music.....88

Physical Education.....89

Science.....92

Social Studies.....95

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
DRAWING *pp: 50-51 Time: 6-9 Weeks	Crayons, craypas, chalks, felt-tip pens, and pencils are used on paper of various sizes, shapes, textures, and weights.
Drawings Based on Experience and Environment	Animals, people, buildings, and vegetation are drawn the 'way they look."
Drawings Based on Fantasy and Imagination	Figures move off the base line, giving a greater sense of space and distance. Background is drawn to indicate setting for figures. Light and dark colors are used to produce objects and moods with greater contrast.
Drawings Based on Stories or Books	The teacher takes an active part in stimulating children's ideas. Children are guided to look at their own drawings critically in order to encourage them to extend their ideas and efforts.

*ART IN THE ELEMENTARY SCHOOLS, Grades K-6: Board of Education Curriculum Bulletin, No. 8
**DESIGN ACTIVITIES FOR THE CLASSROOM, John Lidstone, Davis Publications, Massachusetts, 1977

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
PAINTING *pp: 37-39 Time: 6-9 Weeks	
Tempera Painting	A variety of wide and narrow brushes can be used on 19"x22" newsprint, colored construction paper, and Kraft paper.
Design Painting	Different lines, shapes, and textures are experimented with in designing paintings.
Paintings Based on Experience	Pictures are painted with story content and demonstrate greater ability to represent the shapes of familiar objects. Paintings are "completed" by painting in the background.
MODELING WITH CLAY *pp: 68-69 Time: 4-6 Weeks	Clay is wedged so that it will not explode in the kiln.
People, Animals, Monsters, and Other Forms	Three-dimensional figures are created by pinching and modeling them into shape. Forms are hollowed out to permit drying. Details are 'welded" on, cracks are smoothed out, and surfaces are textured with the use of tools.
Pinch Pots	A ball of clay is hollowed and worked into a pleasing shape. Strong edges and interesting surface decorations are created.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
DESIGNING WITH PAPER *pp: 92-93 Time: 3-5 Weeks Paper Masks	Children experiment by cutting, folding, scoring, and pasting multicolored papers to create a design. Heavy paper is used as a base for paper masks. The paper is scored, cut, and folded to make it fit face or head. Paper designing skills are used to decorate masks and make them more expressive. Craypas or paint is used to add color emphasis. Feathers and yarn can be used to add interest.
POSTER-MAKING AND LETTERING *pp: 78-79 Time: 4-6 Weeks The Picture and the Message	Posters must convey a message clearly and quickly. Posters combine a simple picture with a short message. Pictures are drawn and colored. Pictures are cut out. Words are painted on a strip of paper. (See grade 2.) Words and pictures are combined on a background. Awareness of the eye-catching quality of bright colors is developed.
PRINTMAKING *pp: 63-67 Time: 3-5 Weeks Monoprints	Transferring a painting from one surface to another surface is a process in printmaking. Printmaking provides an opportunity to experiment with paints and make a permanent print of the final version.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
PRINTMAKING (continued)	Tempera paint and soap-or water-soluble printing ink are applied to a piece of rigid plastic. Details are added by removing or scratching away some of the paint with a pointed tool. Before the paint or ink dries, it is carefully covered with a sheet of newsprint. When the newsprint is lifted off the paint, a transfer painting or "print" has been created.
PUPPETS AND PUPPETRY *pp: 134-136 Time: 3-5 Weeks Sock Puppets	Simple original puppets are designed from socks which are stuffed. A cardboard or paper tube is used to form a hollow neck for the puppet. Costumes are made from fabric which is sewn to the sock. Openings in the fabric permit children's fingers to serve as puppet "hands." Fabrics and trimmings are used to create very visible facial features or exaggerated creature appendages. Constrasting colored materials are selected to create visibility and mood.
Dialogue for Puppets	Puppetry stimulates verbal and written expression. Dialoque is created for improvised and planned performances. A simple stage is devised (cardboard box,a table) behind which the children can hide as their puppets perform. Children address themselves to an audience and use sound effects.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
CONSTRUCTING WITH WOOD AND OTHER MATERIALS *pp: 124-125 Time: 2-4 Weeks Non-objective Constructions	Constructions are made from wood pieces, styrofoam, cardboard, and other found objects. The shapes, sizes, and textures of different materials help to suggest ideas as projects are planned. Constructions can grow upward as well as grow outward in flat arrangements.
Representative Constructions Such as Vehicles, Bridges, Rockets, and Buildings	The concept of unity in design is evoked as various shapes are combined in one balanced construction. Pieces are carefully attached to each other by applying a thin layer of a glue to the sides to be joined.
Toys	Constructions can be decorated with paint, trimmings, colored paper or left plain.
FABRICS AND FIBERS *pp: 100-106 Time: 4-6 Weeks Fabric Collage	Collages are pre-planned. Fabrics and trimmings are selected, cut, and arranged on a cardboard base. Materials are attached with glue. The decorative qualities of textured and patterned materials are discovered. Trimmings are used as accents. Materials are handled with greater skill. (See grade 2)

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
FABRIC AND FIBERS (continued)	
Experimental Stitchery	Stitches are invented as children experiment with needles and yarn on burlap. Teacher demonstrates how a "satin" stitch fills in areas, and how "couching" helps make important lines.
Burlap Pictures	A picture is drawn on burlap with a felt-tip pen. Stitches are devised to "color" the picture with yarn. Over-and-under stitches and running stitches are also used. (See Grade 2.)
Dixie Mesh Weaving	Drawings are transferred to dixie mesh with a felt-tip pen. Pictures are "colored" by weaving yarn through the dixie mesh. Skill in handling needles and yarn is increased as children become more familiar with the "over-and-under" process of weaving.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
CLEANLINESS AND HEALTH PROTECTION *pp. 91-94	Germs are found in the air, in drinking water, in food, and on the human body. An infectious disease is one that can spread to someone else. There are many ways of avoiding infectious disease. Sometimes it is necessary to have medical assistance to help fight germs in the body. Good health habits are an important way of keeping the body well.
NUTRITION *pp. 97-99	A balanced diet consists of a variety of foods. Foods are divided into four major groupings: milk and dairy products; meat and fish; fruits and vegetables; bread and cereals. Other countries and peoples vary in their foods and eating habits.
DENTAL HEALTH *pp. 99-104	One's total appearance can be improved by healthy teeth. Teeth aid in the digestion of food. Having two sets of teeth is part of an individual's normal growth pattern; the first set is called the temporary teeth and the second set is called the permanent teeth. Proper care of the teeth is necessary at all times. A well-balanced diet will help keep the teeth strong and healthy.
MENTAL HEALTH *pp. 104-107 Also see FAMILY LIVING INCLUDING SEX EDUCATION	It is important to make and keep friends. People like to express their own ideas and opinions without being embarrassed or humiliated.

HEALTH EDUCATION GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MENTAL HEALTH (cont.)	Leisure-time activities are an important part of good mental health. Everyone should accept responsibility for getting things done. Everyone at some time meets success and failure.
EYES AND THEIR CARE *pp. 107-111	To preserve eyesight, take proper care of the eyes. The eyes have some means of protecting themselves. All children should have their vision tested once a year. When glasses are prescribed, they should be worn.
EARS AND THEIR CARE *pp. 115-117	Sound waves are a means of transmitting signals from one place to another. Hearing is a means of becoming aware of danger. Knowledge of the world around us is promoted through hearing.
SAFETY AND FIRST AID *pp. 115-117	A major cause of accidents is carelessness with regard to matches and fire. On public transportation, good manners will help to develop good safety habits. Children should not accept automobile rides from strangers. In case of an accident, call the police, a doctor, or another adult for help. An injured person should be kept comfortable; get medical assistance as soon as possible.
EXERCISE, REST, AND SLEEP *pp. 118-121	Proper exercise is important to keep the body in good condition. Good posture is important and can be improved by exercise. Proper sleep and rest help the body in many ways.

LIBRARY MEDIA GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
ORIENTATION TO THE LIBRARY MEDIA CENTER	Tours, floor plans and printed signs describe the Library Media Center layout. Charts and diagrams describe the use of Library Media Center equipment and resources.
ORGANIZATION OF LIBRARY MEDIA CENTER	Books and audiovisual resources in the Library Media Center are arranged by subject classification system(s). The Dewey Decimal classification system divides knowledge into subject categories. The Dewey Decimal classification system includes categories for fiction and non-fiction. Specific resources are located by using subject, author and title entries in the card catalog.
USE OF LIBRARY MEDIA RESOURCES	A table of contents lists, in broad categories, information found in the book's chapters and gives page references to those chapters. Indices are used to locate specific information in the body of non-fiction books.

LIBRARY MEDIA GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
USE OF LIBRARY MEDIA RESOURCES	Publication date and/or copyright date on the title page or verso tell approximately when material was published and/or written or revised. Guide words are used to pinpoint sub-topics of entries in encyclopedias and dictionaries. Abridged dictionaries are used to find the definition of words. Abridged dictionaries are used to find pronunciation of words. Encyclopedias are used to locate brief facts on a subject. Guide words, tables of contents and indices are used to locate specific information in reference and other non-fiction books. Browsing involves the selection of material through the use of textual clues and the blurb. Information is obtained by browsing in reference materials. 8mm film loop machines and sound filmstrip viewers are operated independently. Records are used independently to acquire information. Characteristics of specific media determine appropriateness for specific use; e.g., 8mm filmloop may be re-reviewed without rewinding; total page of a book may be viewed at one time.
INTERPRETATION OF LIBRARY MEDIA RESOURCES	Realistic fiction of family and school life provides insight into individual problems; e.g., security, courage, and social relationships; relationships among generations, racial ethnicity, and religious diversity. Realistic fiction of the natural world explores the characteristics of non-human living things.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
NUMBER; NUMERATION *pp. 6, 37, 60, 127	Counting by twos, threes, fours, fives, tens Counting by hundreds to 10 hundreds or 1 thousand Grouping by tens; by hundreds; by hundreds, tens, and ones Comparing and ordering two-digit numbers; three-digit numbers Reading and writing two-digit and three-digit numerals in expanded form Place value concepts through 999 Rounding numbers to the nearest ten; to the nearest hundred
ADDITION OF WHOLE NUMBERS *pp. 15, 41, 57, 62, 64, 66, 151	Basic facts: sums through 18 Algorithm for computing sums of two addends, sums less than 100 with exchange (ones for tens) Adding ten and multiples of ten to numbers through 99 85 +50 Algorithm for computing sums of hundreds and multiples of hundreds 300 +200 and/or 300 + 200 = □ Algorithm for computing sums of two addends, named by three-digit numerals with one exchange (ones for tens) Algorithm for computing sums of more than two addends without and with exchange 54 23 +36

*MATHEMATICS: Grade 3 Curriculum Bulletin. 1977-78, Series No. 9

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
SUBTRACTION OF WHOLE NUMBERS *pp. 19, 44, 62, 64, 66	Basic facts: sums through 18 Concept of inverse operations Algorithm for computing differences of two-place numbers with exchange (1 ten for 10 ones) Algorithm for computing differences of hundreds and multiples of hundreds 600 -200 Algorithm for computing differences of three-place numbers without exchange; with exchange (1 ten for 10 ones)
MULTIPLICATION OF WHOLE NUMBERS *pp. 23, 46, 77, 99, 114, 120, 133	Concept of multiplication Basic facts: twos through 9 twos, threes through 9 threes, fours through 9 fours, fives through 9 fives, sixes through 9 sixes, sevens through 9 sevens, eights through 9 eights, nines through 9 nines Use of commutative property of multiplication Multiplying when one factor is 10 and the other is less than 10
DIVISION OF WHOLE NUMBERS *pp. 25, 47, 80, 103, 116, 123, 135	Concept of division and multiplication as inverse operations Basic facts: twos through the number of twos in 18, threes through the number of threes in 27, fours through the number of fours in 36, fives through the number of fives in 45, sixes through the number of sixes in 54, sevens through the number of sevens in 63, eights through the number of eights in 72, nines through the number of nines in 81 Concept of remainder in division

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
FRACTIONAL NUMBERS *pp. 30, 81, 105	Concepts of halves, fourths, eighths of a whole Concepts of thirds and sixths of a whole Symbol for fractional numbers, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{3}$, $\frac{1}{6}$ Equivalent fractions $\frac{1}{2} = \frac{2}{4}$ $\frac{4}{8} = \frac{1}{2}$ Expressing a fractional number as a whole number $\frac{2}{2} = 1$ $\frac{3}{3} = 1$ Expressing a fractional number as a whole number and a fraction (mixed numeral) $\frac{4}{3} = 1\frac{1}{3}$ $\frac{3}{2} = 1\frac{1}{2}$ Compare halves, fourths and eighths Compare thirds and sixths
MEASUREMENT *pp. 109, 32, 129, 22, 28, 87, 138	Linear: Non-standard units of length Standard units of length (meter, centimeter; foot, inch, yard) Weight: Non-standard units of weight Standard units of weight (kilogram, gram; pound, ounce) Capacity: Non-standard units of capacity Standard units of capacity (liter; cup, pint, quart) Time: Calendar—relationships among day, week, month, year Clock — telling time to the hour, half-hour, quarter-hour. Concept of minute Relationship between minute and hour Concept of after the hour; before the hour Money: Value relationships among penny, nickel, dime, quarter, half-dollar, and dollar

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Temperature: Concept of temperature as the measure of heat Measurement of temperature, using Celsius and Fahrenheit thermometers Standard units for measuring temperature: degree, ^{o}C and degree, ^{o}F
GEOMETRY *pp. 95, 170	Concept of polygon Some properties of polygons (triangle, square, rectangle) Recognition of symmetrical patterns
GRAPHS; PROBLEM SOLVING; PROBABILITY *pp. 9, 13, 49, 125	Collecting and organizing data Constructing, reading and discussing bar graphs Answering questions by reading and interpreting the graphs Creating verbal problems related to bar graphs and charts Determining the number operation for solving problems Translating verbal problems into number sentences

MUSIC GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
RHYTHM	
Reading Rhythm Notation	Rhythm notation is written through the use of meter signatures (4/4, 3/4, 2/4); bar lines and measures. The meter signature conveys rhythm information important to the music, e.g., the top number of the meter signature denotes the number of beats in each measure. Tempo markings are the composer's way of conveying the speed of music, e.g., Allegro-fast, Lento -slow.
SINGING	
*p. 67-70	A song is a medium for many musical learnings.
Vocal Techniques	Attention to vocal techniques will lead to quality singing. Some early vocal techniques are: breath support, diction and long sustained tones. Folk songs can be added to the repertoire of songs.
LISTENING	
* p. 77-82	The listening experience is enhanced by specific listening direction , e.g., awareness of voice qualities, different musical instrument qualities, timbres, textures and style.
Direct Listening	
CREATIVE EXPERIENCES	
Sound Scores	Sounds around us can be scored through pictures.
Accompaniment	The dramatic effect of poetry and stories can be heightened by improvised rhythm instrumental accompaniment.
MUSIC READING	
* p. 89	
Hand Signals	The Kodaly hand signals, which denote pitch, help children to "feel" pitch.

*TEACHING MUSIC Grades K-4 1978-1979 Curriculum Bulletin No. 5

PHYSICAL EDUCATION GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WHERE THE BODY MOVES	
Spatial Awareness	Appreciating the need for space, both personal and general, for efficient movement Using space readily in games and locomotor activities
Direction Awareness	Knowing direction--to the right, to the left, on the diagonal Combining direction readily with manipulative skills Combining direction with faster locomotor tasks
Level Awareness	Knowing and using varied level differences in games and manipulative movements
Awareness of Pathways	Understanding and moving in direct and indirect routes Knowing the difference between circular, angular and straight pathways
THE BODY AND ITS PARTS	
Body Awareness	Knowing specific body parts and major divisions of the body Isolating specific body parts in the performance of skills Developing fine motor control
HOW THE BODY MOVES	
Time, Force, Flow	Using of force and flow in the refinement of skills Beginning to understand the force needed to achieve desired results in a game or stunt Performing light bounces, high water, low water, gentle rolls, high, strong throws

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WHAT THE BODY CAN DO	
Non-Locomotor Movements	Applying specific non-locomotor movements to manipulative activities--bending forward to bounce a ball; bending down to pick up an object Performing games and stunts involving non-locomotor movements
Locomotor Movements	Combining locomotor activities with manipulative movements in using equipment--running while bouncing a ball; jumping while turning a rope Using locomotor activities readily in games with and without equipment Combining specific locomotor movements--running and jumping, leaping, hopping Executing forward rolls, backward rolls, series of forward rolls with improved coordination
Manipulative Movements	Throwing and bouncing large or small balls with one or two hands Combining ball bouncing with running, skipping, galloping Catching a thrown ball while running Kicking a ball resting on the ground Moving ball along the ground with feet Throwing and catching hoops, rings (quoits) and bowling pins Jumping rope on one foot, alternating feet with the rope turning forward or backward Jumping rope with both feet crossed
Uses of the Parts	Executing bicycle, caterpillar walk, hop scotch, the top Beginning to control specific body parts in a handstand and arabesque (balance)

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CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
RHYTHMS AND DANCE	
Creative and Rhythmic Expression	Performing locomotor and manipulative skills more rhythmically Running, bouncing ball, jumping rope using one's own rhythm--to or without music Performing creatively and showing originality in manipulating small equipment Combining locomotor steps to form patterned sequences--run, run-hop; heel-and-toe and step, step, step
Dance	Performing Cashebogar, Virginia Reel, Bleking and Alley Cat

SCIENCE GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
ELECTRICITY IN EVERYDAY LIFE *pp: 27-40 Time: 5 weeks	
Electricity Around Us	Electricity does many jobs for us. Electricity gives us light, sound, heat, and motion.
Electricity Travels in a Circuit	A dry cell is a source of electricity. A switch will open or close a circuit. Metals conduct electricity; non-metals do not. Poor conductors can be used as insulators.
THE EARTH AND THE SUN *pp: 41-53 Time: 6 weeks	
Night and Day	The earth is round and it rotates every 24 hours causing night and day. In one year the earth moves around the sun.
Telling Time	The earth's steady turning makes it a clock. Clocks and watches are run by various methods. Today's clocks are more accurate than those of the past.
THE NEEDS OF PLANTS AND ANIMALS *pp: 54-74 Time: 6 weeks	
Needs of Plants	Green plants need light, water, air, proper soil, and correct temperature to grow.

*SCIENCE - GRADE 3-4, #11 - 66-67 Series

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	The amounts they need vary. Each part of the plant helps it to live and grow.
Needs of Animals	All animals need food, water, air, and shelter. Each kind of animal feeds, moves, and protects itself in its own way.
HOW SOUNDS ARE MADE *pp: 75-90 Time: 5 weeks	
Sound and Vibrations	Musical sounds are made by plucking, striking, blowing, and rubbing. Sound is produced only when something vibrates.
OBSERVING AND MEASURING WEATHER CHANGES *pp: 91-114 Time: 7 weeks	
Temperature	Temperature changes from day to day and is measured in degrees with a thermometer. The liquid in the thermometer expands when it is warm and contracts when it is cool.
Wind Direction	Wind direction may be detected by observing smoke, trees, flags, and clothes on a line. Wind direction is measured with a wind vane and is named in the direction from which it blows. Wind speed is measured with an anemometer.

SCIENCE GRADE 3

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Rain, Snow, and Water Vapor	Rainfall may be measured by collecting rain in a jar. Snowfall is measured with a ruler. Air contains invisible water vapor that evaporates into the air from wet surfaces. Humidity changes from day to day.
FRICTION, GRAVITY AND MOTION *pp: 115-133 Time: 6 weeks	
Friction Affects Motion	When surfaces rub against each other, there is friction between them. Friction is decreased by using lubricants, rollers, wheels, and bearings. Friction is increased by making surfaces rougher. Sometimes friction helps us.
Gravity Affects Motion	Going up means going away from the center of the earth, and going down is toward the center of the earth. The earth's gravity exerts a pull on all objects and will slow up objects going up and increase the speed of objects going down.
ROCKS AND HOW WE USE THEM *pp: 134-154 Time: 5 weeks	
Rocks We Use	Natural and synthetic rocks are used for buildings because of their properties.

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CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
HOW DO WE LIVE AND WORK IN AND AROUND NEW YORK CITY? Review and reinforcement of grade 2 learnings to meet individual and class needs.	
HOW DO PEOPLE IN A COASTAL REGION USE THEIR RESOURCES AND GEOGRAPHY?	
Time: 8 weeks	
Case Study: Tri-State Area and New York City	The tri-state area around New York City is a center of world trade because of its geographic features: fine harbors, easy access to inland regions, and rich natural resources, e.g., fishing, farming, furs, and human resources.
Geographic Features Location Natural environment Population distribution	
Historical Development Significant trends past to present Important leaders Current changes	Italian, Dutch and English explorers came to this area for economic reasons. Native Americans, Dutch and English made settlements. The settlements grew into large colonies. Cities grew because of the ease of transportation on the rivers, the fine harbors, and abundant natural resources. New York City and the tri-state area are faced with many urban problems: e.g. crime, poverty, finance.
Government Local government State government	Major differences between local and state governments exist.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Economic Practices and Chief Occupations of the People Meeting needs for food, clothing and shelter Producing goods and services for wants	Many people work in the region and provide us with goods and services. Major occupations include skilled and semi-skilled jobs in manufacturing, finance, trade, communications and transportation.
Social and Cultural Life in the Region Languages Customs and traditions Religions	Many people take advantage of the cultural facilities of the region: museums, theater, opera, art galleries, ballet, parks, zoos. The region reflects the cultures of many diverse ethnic groups.
Major Problems of the Region	Current problems include fiscal and budgetary difficulties, pollution, housing, crime, health and education.
HOW DO PEOPLE IN OTHER REGIONS USE THEIR RESOURCES AND GEOGRAPHY? Time: 30 weeks Required: Case Studies of Five Geographic Regions	The characteristics of a particular geographic region of the United States are studied with emphasis on the similarities and differences among cities and their regions.
HOW DO PEOPLE LIVE IN A DESERT REGION OF THE U.S.? The American desert and the city of Phoenix	The ways in which men respond to natural conditions, and develop cultural resources are studied. The geography of a region affects the people's lifestyle, economy and cultural activities. See sample case study: Tri-State Area and New York City.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
HOW DO PEOPLE LIVE IN A MOUNTAIN REGION OF THE U.S.? The Rocky Mountains and Boulder, Colorado	See sample case study: Tri-State Area and New York City.
HOW DO PEOPLE LIVE IN A GRASSLANDS REGION OF THE U.S.? The Great Plains and Kansas City	See sample case study: Tri-State Area and New York City.
HOW DO PEOPLE LIVE IN A TROPICAL AREA? Puerto Rico and San Juan	See sample case study: Tri-State Area and New York City.
HOW DO PEOPLE LIVE IN A FOREST REGION OF THE U.S.? Northern Rain Forest and Seattle	See sample case study: Tri-State Area and New York City.
CURRENT AFFAIRS	Current affairs are studied to see how they affect children's lives and to assist in developing civic responsibility.
WORK STUDY SKILLS	Glossary and index are used to locate information. Multi-media resources are used, e.g., films, records, cassettes, pictures. A simple paragraph is written as a means of reporting. Relative terms of direction (northeast, southwest) are used. Cardinal directions are identified. Simple estimations of time and distance are made. Distinctions between land and water are made on maps. Title, key, and directional sign on a map are used. Different routes to the same point are found on maps.

Grade 4

MINIMUM TEACHING ESSENTIALS

Art.....100

Health Education.....106

Library Media.....109

Mathematics.....111

Music.....116

Physical Education.....117

Science.....120

Social Studies.....124

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
DRAWING *pp: 52-53 Time: 6-9 Weeks	Crayons, craypas, felt-tip pens, chalk, pencils, thin brushes, and twigs are used to draw on papers of various sizes, shapes, colors, textures, and weights.
Experimental Drawings	The different qualities of line are explored. Progression is made from the additive process of creating figures to the use of continuous lines and the drawing of profiles.
Drawings Based on Experience and Make-believe	Representing things the way they "really" are, requires training in learning how to see. The basic shapes which are incorporated in the objects of the real world are identified. Much detail is carefully observed.
Drawings Based on Subject Matter from Other Curriculum Areas	The foreground and background in pictures are consciously represented as children observe that smaller objects, high above the base line, represent objects in the distance.

*ART IN THE ELEMENTARY SCHOOLS, Grades K-6: Board of Education Curriculum Bulletin, No. 8
**ART TEACHING GUIDES, PUPPETS AND PUPPETRY: Board of Education Curriculum Bulletin, No.8h
*** DESIGN ACTIVITIES FOR THE CLASSROOM, John Lidstone, Davis Publications, Massachusetts, 1977

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
PAINTING *pp: 37-39 Time: 9-12 Weeks Tempera	Wide and narrow brushes are used on newsprint and large manila paper. Resourcefulness in mixing colors develops as two basic colors, colors with white, and colors with black are mixed.
Discovery Painting	Awareness of the painterly quality of their work grows as children use color contrast and pattern more deliberately.
Paintings Based on the Real and Imaginary World	Background becomes an integral part of the picture as "story content" provides subject matter.
Mixed Media	Crayons and paints are combined to create mixed media pictures.
MODELING WITH CLAY *pp: 69-70 Time: 6-9 Weeks Details and Design	Figures are created with increased realism and attention to detail. Art pieces are rotated and entire design is considered as work proceeds.
Bowls, Boxes, and Jewelry	Clay coils are made and used to create free forms or functional shapes. Clay coils or buttons (shaped by slicing a coil) are added to clay shapes for decoration.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
DESIGNING WITH PAPER *pp: 91-92 Time:2-4 Weeks Experimental Design	Paper is scored with scissors and curved folds are made. Experimentation with paper requires use of all designing skills.
The Party Hat	A party hat is created as children measure paper to fit their head size. Experimenting with colors, shapes, and three-dimensional effects; exotic hats are created.
FABRICS AND FIBERS *pp: 100-106 Time: 4-6 Weeks Experimental Stitchery	The cross stitch and tapestry stitch are used to make a sampler on burlap.
Appliqué	"Collage" is made on a fabric background and, therefore, becomes "appliqué." A running stitch is used to sew design pieces to the fabric background. The blanket stitch will add another decorative effect. The applique pictures can be mounted on dowels for wall hangings or sewn into pillow covers. Realistic pictures can be created by combining drawing,painting, and fabric collage.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
POSTER MAKING AND LETTERING *pp: 79-80 Time: 4-6 Weeks School Posters on Safety, Health and Other Topics	Posters can be made from cut paper. Simple pictures are cut from paper. Block letters are cut out of paper and pasted down to form key words. The elements of the poster, pictures and words, are arranged on a background of suitable color contrast. Letters are spaced for clear legibility. Pictures and words are arranged to create a unified design. The elements of the poster are made permanent by removing one piece of the design at a time to apply adhesive and glue in place.
PUPPETS AND PUPPETRY *pp: 136-137 **pp: 4-5 Time: 4-6 Weeks Puppet Heads	Papier-mâché is used to model a puppet head. The features of the face are exaggerated for maximum expressiveness. The puppet face is painted with colors that give maximum visibility at a distance.
Costumes	A paper pattern is planned for the costume with sleeves and (possibly) legs. The paper pattern is pinned to fabric and cut out. Costume is sewn and accessories are added.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
PUPPETS AND PUPPETRY (continued)	
Background	Drawing,painting,cutting, and pasting skills are used to create a backdrop of maximum visibility,suitable mood,and dramatic effect.
Staging	A stage is created that is sturdy,functional, and attractive. An arrangement of cardboard cartons can be used.
Performance	Dexterity and coordination in manipulating puppets are increased.
PRINTMAKING ***pp: 63-71 Time:2-4 Weeks Nature's Designs	Awareness of the beautiful designs and textures found in nature is increased as children select natural objects with which to make prints. Leaves,grasses,seeds,shells and other objects are used to make rubbings with crayons. Natural objects can be inked to make prints on paper. Objects may be pressed into soft clay to create fossil-like patterns. Ceramic clay is allowed to dry and plaster casts are made. Plaster is inked and covered with paper. Back of paper is rubbed with a brayer to produce a print.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
CONSTRUCTING WITH PAPIER-MÂCHÉ *pp: 136-137 Time: 2-4 Weeks Three-Dimensional Masks, Puppet Heads, Free Standing Animal Figures, and Non-objective Forms	An armature is created out of rolled newspaper or a cardboard shape. Paper becomes a modeling medium as wheat paste, water, and old newspapers are used to cover the armature. Paint and a variety of trimmings are used for surface decoration. Three-dimensional design requires that children contemplate their work from all directions.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
CLEANLINESS AND HEALTH PROTECTION *pp. 122-126	Diseases are caused by germs, or microbes. They may be spread by various methods, including sneezing and coughing. Disease-causing organisms such as viruses or bacteria may enter the body by various pathways. Immunization gives us protection against certain diseases. Many drugs help the body fight infections.
NUTRITION *pp. 131-135	Most foods that supply our body needs are divided into four basic groups. These groups should be included in the daily food plans. A good breakfast is very important: fruit, eggs or whole-grained or enriched cereals, toast, and milk will give a good start for the day. A good lunch is one that is well balanced. Dinner is an important meal of the day. Snacks should include foods that promote good health. Tea and coffee have no nutritional value. They also contain caffeine, a stimulant.
DENTAL HEALTH *pp. 135-138	One of the functions of teeth is to aid digestion through the chewing and breaking up of food. It is important to visit the dentist periodically. There are government agencies that will help those who find it difficult to pay for the services of a dentist. Fluoridation involves adding a chemical to water; using fluoridated water reduces dental decay.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MENTAL HEALTH *pp. 138-145 Also see FAMILY LIVING INCLUDING SEX EDUCATION	There are many ways to make new friends, e.g., respecting and accepting others. Children should work together cooperatively at school. People differ from other people in many ways. It is important to understand why there are rules and laws.
EYES AND THEIR CARE *pp. 145-149	The structure of the eye is similar to the structure of a camera. The eyes are delicate organs and require good lighting. It is important to give the eyes proper care and adequate rest. People who wear glasses when they need them are safeguarding their eyes.
EARS AND THEIR CARE *pp. 150-154	The ears are the organs of the body which make it possible for people to hear. The ears are composed of three parts: the outer, middle, and inner ear. It is important to take proper care of the ears so that they can function properly. Injury may cause damage to the ears.
SAFETY AND FIRST AID *pp. 154-160	Carelessness is frequently a factor contributing to accidents. Accidents can be prevented in classrooms, at home, and outdoors by following safety rules. First-aid procedures are necessary in times of emergency.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
EXERCISE, REST, AND SLEEP *pp. 160-163	Proper exercise is necessary for maintaining good health. Muscles are kept in better condition if they are properly exercised. Sleep is an important health requirement.
ALCOHOL, TOBACCO, AND SUBSTANCE ABUSE *pp. 164-167	Drinking alcoholic beverages to excess may result in drunkenness. It is illegal for children to be served alcoholic beverages. It is better for growing boys and girls to drink milk and fruit juices than alcoholic beverages. All people should refrain from using tobacco. Tobacco, which contains nicotine and tars, affects the lungs and blood vessels. The inhalation of the fumes of non-medical substances is a dangerous practice.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
ORIENTATION TO THE LIBRARY MEDIA CENTER	Review and mastery of previously learned skills.
ORGANIZATION OF THE LIBRARY MEDIA CENTER	Cross references in the card catalog are used to locate material on the subject under consideration. Cross references in reference books are used to locate material on the subject under consideration. Book catalogs are used similarly to card catalogs to locate media.
USE OF LIBRARY MEDIA CENTER RESOURCES	Subject entries in card and book catalogs and in encyclopedia indices lead from the general subject to the specific.
Use of Encyclopedias	Encyclopedias are used to get an overview or summary of a subject Encyclopedias are arranged alphabetically or by subject. Continuous revision is a means of updating encyclopedias. Encyclopedia annuals and yearbooks are a means of updating the basic encyclopedia set.
Use of Biography	Biography is an account of a person's life. Collective biography contains accounts of the lives of more than one person. A foreword or preface explains the approach of the author and the coverage of the subject. An appendix provides material which supplements and expands the information contained in the basic text.
Use of Geographical Tools	Maps are two-dimensional scale representations of geographical areas. Globes are a three-dimensional scale representation of the world. Legends are used to locate geographical sites on maps.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
INTERPRETATION OF LIBRARY MEDIA RESOURCES	
Social Science Resources	Historical fiction gives insight into the history and development of the United States and other countries. The understanding of history is enhanced by the study of biography. Problems of urban living; the culture of social, ethnic and religious groups; the concerns of physically, emotionally or mentally handicapped people are explored in contemporary children's literature. Encyclopedias differ in the breadth and depth of their coverage of different subjects; for example, compare the geographic coverage of World Book and Compton's Skimming print materials gives practice in finding names, dates, phrases, facts, or ideas.
Interpreting Audiovisual Materials	Previewing audiovisual material gives practice in locating ideas and illustrations.
Interpreting Literature	Poetry gives significance to everyday life. Poetry uses strong and evocative language to create mood and imagery. Poetry appeals to the intellect as well as the emotions. Content and emphasis of a story change when it is translated into a different medium. For example, compare Ezra Keat's John Henry in book and filmstrip form.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
NUMBER; NUMERATION *pp. 3, 4, 12, 14	Concept of odd and even numbers Counting by thousands to ten thousands Place value through ten thousands Reading and writing four-digit and five-digit numerals in expanded notation Reading and writing numerals through ten thousands Comparing and ordering numbers Rounding numbers to the nearest ten; nearest hundred; nearest thousand Estimating quantities Dollars-and-cents system of numeration Rounding to the nearest dollar
ADDITION OF WHOLE NUMBERS *pp. 5, 9, 10, 12, 18	Algorithm for computing sums of two addends named by three-digit and four-digit numerals with exchange: ones for tens; tens for hundreds; hundreds for thousands; multiple exchanges; dollars and cents Algorithm for computing sums of more than two addends named by three-digit and four-digit numerals with multiple exchanges 345 +276 Estimation - checking for reasonableness of an answer Use of commutative property
SUBTRACTION OF WHOLE NUMBERS *pp. 5, 10, 11, 12, 15, 18	Algorithm for computing differences named by three-digit and four-digit numerals with exchange: tens for ones; hundreds for tens; thousands for hundreds; multiple exchanges; dollars and cents

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Application of inverse operations Estimation – Checking for reasonableness of an answer
MULTIPLICATION OF WHOLE NUMBERS *pp. 6, 7, 9, 11, 13, 14, 15, 18	Basic facts Multiplication by 0; by 1 Concept of multiples Use of commutative property Multiplication of 10 and multiples of 10 by numbers less than ten 2 x 10 = ☐ 2 x 20 = ☐ Multiplication of 100 and multiples of 100 by numbers less than ten 3 x 100 = ☐ 3 x 200 = ☐ Algorithm for multiplication of two-place and of three-place numbers by numbers less than ten Multiplication in dollars and cents system Estimation - checking for reasonableness of the product
DIVISION OF WHOLE NUMBERS *pp. 7, 8, 10, 12, 14, 18	Basic facts Role of 1 as a divisor; role of zero as a dividend Recording and reading symbols for division $2\overline{)12}$ 12 ÷ 2 = ☐ Multiplication and division as inverse operations Division as repeated subtraction Algorithm for division of two-place numbers and of three-place numbers, by numbers less than 10 Division in dollars-and-cents system Estimation - checking for reasonableness of the quotient
FRACTIONAL NUMBERS *pp. 6, 8, 9, 10, 13, 16	Meaning of fraction Symbol for fractional number

CONTENT AREA AND TOPIC

SKILLS AND KNOWLEDGE

Concept of improper fraction $\frac{5}{2}$

Concept of mixed numeral $2\frac{1}{2}$

Equivalent fractions $\frac{2}{4} = \frac{1}{2}$

Counting; comparing; ordering

Fraction names for 1 $\frac{4}{4} = 1$ $\frac{10}{10} = 1$

Fractional number expressed as a whole number $\frac{12}{4} = 3$

Concept of fifths and tenths

Algorithm for finding fractional parts of numbers

$\frac{1}{3}$ of 9 = ☐

Addition and subtraction of fractional numbers with like denominators $\frac{4}{10} + \frac{3}{10} = ☐$ $\frac{7}{10} + \frac{3}{10} = ☐$

Addition and subtraction of whole numbers and fractional numbers with like denominators (mixed numerals)

$$\begin{array}{r} 16\ \frac{4}{10} \\ +\ 26\ \frac{3}{10} \\ \hline 42\ \frac{7}{10} \end{array} \qquad \begin{array}{r} 42\ \frac{7}{10} \\ -\ 26\ \frac{3}{10} \\ \hline 16\ \frac{4}{10} \end{array}$$

MEASUREMENT

*pp. 6, 8, 13, 14, 18, 19

Linear:

Estimating length; reading scales on rulers; measuring perimeter

Standard units - centimeter, decimeter, meter, kilometer
inch, foot, yard, mile

Relationships between standard units
10 cm = 1 dm
12 in. = 1 ft.

MATHEMATICS GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Weight: Estimating weight; reading scales on measuring devices Standard units - gram, kilogram, metric ton ounce, pound, ton Relationships between standard units 1000 g = 1 kg 1 lb. = 16 oz.
	Capacity: Estimating capacity; reading scales on measuring devices Standard units - liter, milliliter cup, pint, quart Relationships between standard units 1000 mL = 1 L 2 pts. = 1 qt.
	Time: Clock - relationships among day, hour, minutes, seconds Telling time in quarter hours; in five-minute and minute intervals Recording time: 3:06 Calendar - relationships between days-year; days-month; weeks-year; reading a calendar; recording date 1/11/79
	Temperature: Concept of temperature as a measure of heat Measure temperature using Celsius and Fahrenheit thermometer Concepts of freezing point and boiling point Standard units - degree ^{o}C and degree ^{o}F
GEOMETRY *pp. 3, 11, 13, 18	Properties of plane figures (quadrilateral, triangle, and circle) Some properties of rectangular solid, cylinder, and cube Perimeter of a polygon (rectangle, square) Recognition of symmetrical patterns

MATHEMATICS GRADE 4

CONTENT AND AREA TOPIC	SKILLS AND KNOWLEDGE
GRAPHS; STATISTICS; PROBLEM SOLVING; PROBABILITY *pp. 10, 11, 15	Collecting and organizing data Constructing and interpreting bar graphs Deriving word problems and questions relevant to the bar graphs Recognizing the appropriate number operation(s) needed to solve word problems Identifying insufficient and irrelevant information Meaning of average (mean) of a set of numbers

MUSIC - GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
RHYTHM *p. 61-66	Word patterns are related to rhythm patterns. Interesting word phrases help create rhythm patterns. Musical instruments are used to perform rhythm patterns. More than one rhythm pattern can be performed at the same time.
SINGING *p. 72	The song is the medium for many musical learnings, e.g., the phase, mood, form, harmony.
Musical Learnings The Round	Two-part singing is easily introduced with the "round." Hand signals for pitch (Kodaly) are used to develop interval awareness, (thirds, fifths).
LISTENING *p. 79	
Tonality	A tonal center is present in most songs (key). Most traditional songs are written in the "major" or "minor" mode. Different composers wrote in different modes.
INSTRUMENTAL MUSIC	
Improvisation	The creative experience begins with free improvisation. Musical instruments and the voice can improvise to songs, poetry, stories, recordings.
Melody Instruments	Melodies and harmony are performed on the xylophone, metalophone and the recorder. The recorder is a musical instrument which leads to the playing of orchestral instruments.

*TEACHING MUSIC Grades K-4 1978-1979 Curriculum Bulletin No. 5

PHYSICAL EDUCATION GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WHERE THE BODY MOVES	
Spatial Awareness	Forming work or play groups and choosing appropriate space Engaging individual activity regardless of available total area Understanding significance of space in playyard, halls lunchroom, and other areas of school Moving freely with or without equipment
Direction Awareness	Applying direction to simple stunts and tumbling activities Applying direction to rope-jumping patterns Changing direction rapidly, particularly in running activities Thinking of direction in terms of air space rather than ground space
Level Awareness	Varying levels rapidly while in motion and manipulating small equipment Varying levels readily in the execution of simple stunts and tumbling Varying levels in relays with and without equipment
Pathways Awareness	Engaging in relays involving different pathways and a variety of small equipment Beginning to think of pathways in air space rather than ground space
THE BODY AND ITS PARTS	
Body Awareness	Participating in activities and games involving laterality (right and left reinforcement) -- pass ball or baton from right to left hand; tag with right or left hand; shoot ball from left side of backboard Developing the efficient use of one's right- or left-handedness Using fine motor control (fingers rather than palm in ball handling)

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE	118
THE BODY AND ITS PARTS		
Body Awareness (cont.)	Using specific parts to perform a handstand with assistance, a handstand and forward roll, headstand and forward roll, headstand and shoulder roll	
HOW THE BODY MOVES		
Time, Force, Flow	Using force and flow efficently in bouncing, catching, throwing, kicking, striking, hitting and various locomotor skills Improving speed in movement--dashing from a starting point to a finish line Jumping and striking a ball or shooting at a basket	
Non-Locomotor Movements	Using push, pull, bend, stretch, curl, twist, and turn in the performance of stunts, tumbling, game, and dance activities	
Locomotor Movements	Applying manipulative skills to sport-related activities (locomotor) running and bouncing as in basketball kicking and moving a ball forward as in soccer catching a ball on the run as in football hitting the ball as in handball	
Manipulative Movements	Being able to kick, punch, bounce, bat, catch, and throw successfully, individually or in small groups Applying these skills in games Jumping rope; being able to criss-cross rope while jumping; cross feet and separate them in jumping; jump at increasingly faster speed; perform 25 jumps in 10 seconds	

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
WHAT THE BODY CAN DO	
Uses of the Parts	Performing log roll, hop on one foot, squat and jump Balancing in a handstand with assistance Combining handstand with forward roll Performing headstand Performing shoulder roll
RHYTHMS AND DANCE	
Dance	Combining locomotor steps to achieve accepted dance steps such as the polka or schottische Responding rhythmically to folk, popular and other music Working with partners of own choice; mix partners Moving clockwise and counterclockwise Traveling in lines of two, three, four Forming squares Being able to perform the Cumberland Square, La Raspa, Patty Cake Polka, Greensleeves

SCIENCE GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
FINDING DIRECTION WITH A COMPASS *pp: 157-173 Time: 4 weeks	
Find the Way Home	Landmarks help us find our way. A map represents an area of the earth and shows facts about that area. The sun's position at different times of the day gives us direction.
Finding the Way With a Compass	A compass tells direction. One end of a compass needle points in a northerly direction. We can make a compass by rubbing a steel needle on a magnet.
The Earth As a Compass	A freely swinging magnet may be affected by iron or steel nearby. Unlike poles of magnets attract each other; like poles repel each other. The earth behaves like a magnet and attracts compass needles. The earth's magnetic poles are not the same as its geographic poles.
OUR NEAREST NEIGHBOR IN SPACE: THE MOON *pp: 174-193 Time: 7 weeks	
Seeing the Moon	Moonlight is reflected sunlight. The moon seems to change its shape and shows dark and light areas on its surfaces, mountains, and plains. The moon is 1/4 the diameter of the earth.
Distance of the Moon From the Earth	The moon is about 30 "earths" away from the earth. The moon is the nearest astronomical body to the earth. The moon looks small because it is far from the earth.

SCIENCE GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Man On the Moon	Moon probes discover many facts about the moon. Man must take his own environment with him to the moon because there is no air, water, or food on the moon. The temperature on the moon varies from extreme cold to extreme heat. The moon has less gravity than the earth.
Eclipses of the Moon and Sun	An eclipse of the moon occurs when the earth blocks off the light of the sun. An eclipse of the sun occurs when the moon blocks off the light from the sun.
GETTING NEW PLANTS *pp: 194-205 Time: 6 weeks	
New Plants From Seeds, Leaves, Stems, and Roots	New plants come from seeds that are scattered in different ways to suitable surroundings. In some plants a new plant may be started from roots, stems, or leaves.
SOUNDS TRAVEL: SOUNDS CAN BE RECORDED *pp: 206-224 Time: 5 weeks	
Sounds Are Carried By Air and By Other Materials	Sounds travel from one place to another through air, water, and solids.

SCIENCE GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Sounds can be controlled. Sound can be reflected from a surface. Sound travels more slowly than light. An echo is reflected sound.
Sounds Can Be Recorded for Future Use	Sounds are preserved by impressing their vibrations onto a turning record. The vibrations carve wavy grooves in the record which, when the record is played, cause a needle to vibrate and reproduce the sound.
WEATHER AND CLIMATE FROM SEASON TO SEASON *pp: 225-254 Time: 7 weeks	
The Seasons	New York has a yearly cycle of four seasons: autumn, winter, spring, and summer; each one with its own temperature. For each season the average temperature is determined by the number of hours of daylight and the angle at which the sunlight strikes the earth. Rays of sunlight which strike the earth directly warm it more than rays which strike it at a slant.
Varieties of Weather in New York City	New York City has a great deal of "unusual" weather. New York City experiences lightning, thunderstorms, hail, ice storms, fog, hurricanes, blizzards, haze, cold waves, heat waves, and drought. A rainbow may occur after a rain.

SCIENCE GRADE 4

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MOVING THINGS MORE EASILY *pp: 255-276 Time: 6 weeks	
Machines With Wheels Help Move Things More Easily	Wheels are found in many machines. The pulley, gear and wheel, and axle make it easier to move things.
Ramps Help Lift Things More Easily	Ramps are used to lift things more easily and to slow the speed of objects moving downward.
Levers Help Move Things More Easily	With some levers, less force is needed to move objects and objects may be made to move faster.
THE WATER WE USE *pp: 277-300 Time: 4 weeks	
The Water We Drink	Our water is collected outside our city from watersheds. Aqueducts bring the water from distant reservoirs. Drinking water tastes good and is free from germs. Water must be conserved.
Bodies of Water in New York City	Many kinds of bottom plants and animals live in or near water near New York City. Moving water changes the surrounding land.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
URBAN LIVING IN GEOGRAPHIC REGIONS AROUND THE UNITED STATES Review and reinforce grade 3 learnings to meet individual and class needs.	
HOW PEOPLE DISCOVERED AND EXPLORED WHAT IS NOW THE UNITED STATES	America was rediscovered by other European explorers almost five hundred years after the Vikings. Knowledge was acquired by Europeans from the Native Americans. Native Americans, Spanish, French, English, and Dutch made settlements.
HOW PEOPLE SETTLED AND DEVELOPED THE ORIGINAL THIRTEEN COLONIES	Many people helped lead the colonists into the Revolution. Many people helped lead the fight for independence.
HOW THE PEOPLE OF THE UNITED STATES USE THEIR GEOGRAPHY (COMPARISON OF COLONIAL PAST AND PRESENT) REGIONAL STUDIES CASE STUDIES (Select one) New England Southeast	Case Study of the Northeast (a sample case study outline) Geographical Features Chief Occupations of the People Geographic Basis for Industry Geographic Basis for Agriculture Interdependence within the Region and with other Regions Major problems in the Region Social, Cultural and Economic Practices of the Region
HOW PEOPLE DEVELOPED OUR NATION - (TO PRESENT)	The nation expanded from shore to shore. People of many lands contributed to the industrial, scientific, economic, and cultural development of the U.S. Many people worked for human dignity and to improve social conditions. Many people led the fight for civil liberties.

GRADE 4: AMERICAN PEOPLE AND LEADERS: HOW THE UNITED STATES BEGAN AND GREW (Reference for Adaptation)

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Many people helped to develop modern science and industry. Many people have been leaders in government, arts, national defense, fight for freedom. People of many ethnic groups have contributed to our economic, political, and cultural life.
HOW PEOPLE IN OTHER REGIONS OF THE UNITED STATES USE THEIR GEOGRAPHY (COMPARISON OF 19th CENTURY PAST AND PRESENT) CASE STUDIES (Select one) Midwest Southwest Northwest U.S. Possessions - e.g., Puerto Rico, Virgin Islands	
CURRENT AFFAIRS	Current affairs are studied to see how they affect children's lives, and to assist in developing civic responsibility.
WORK STUDY SKILLS	Road maps are used to chart directions and to learn map symbols. Routes of interest on maps are traced. Visual content of maps and pictures are compared. Relative directions (northeast, southwest) are used. Cities, states, nations and continents are identified. Simple estimations of distance are made. Picture and clipping files are used for reports. An atlas, world almanac, and encyclopedias are used to find information. The card catalogue is used to locate books in a library. Sources of information in a report are identified in a simple bibliography. Events are placed in sequence. Conflicting views and statements are presented in a discussion.

Grade 5

MINIMUM TEACHING ESSENTIALS

Art.....128

Health Education.....131

Library Media.....134

Mathematics.....135

Music.....140

Physical Education.....141

Science.....144

Social Studies.....149

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
PAINTING *pp: 39-41 Time: 9-12 Weeks The Near and Far in Space	Overlapping shapes in a painting express near and far relationships. Contrasts in light,dark,color,and textures make overlapped parts clear. Different colors appear to advance or recede.
Expressive Use of Color	A wide variety of color tones can be made from any one color. The combination of color tones in a painting shows sensitiveness. Observed characteristics are rendered by expressive use of color.
DRAWING *pp: 54-57 Time: 9-12 Weeks Expressing the Near and Far	Near and far relationships are represented by drawing objects in front of or behind one another. Contrasts of light and dark, plain and textured areas make visible parts of overlapped forms clear. Relative importance of things in space is determined by their size,shape,color, and position. Realism is established by integration of observing,thinking and expressing.

*ART IN THE ELEMENTARY SCHOOLS, GRADE K-6 Curriculum Bulletin No. 8 Series 63

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MODELING WITH CLAY *pp: 71-73 Time: 4-6 Weeks Form and Construction	The construction of an expressive form is planned. Complex forms often combine two or more types of construction. The design or surface treatment of a clay form can be modified to make a more interesting object.
MAKING POSTERS *pp: 80-81 Time: 2-4 Weeks Pictorial Symbols and Dramatic Effect	Pictorial symbols and appropriate words dramatize an idea in concise form. Changes in emphasis are produced by adjustment of sizes and placement of symbols and of word areas. Dramatic effect is achieved through use of a limited number of colors.
WORKING WITH PAPER *pp: 92-93 Time: 2-4 Weeks Three-Dimensional Construction as Process	A three-dimensional paper or cardboard article requires a working sketch or trial construction. Constructions are made through a combination of measuring, folding, cutting, rolling, fitting, and fastening. Improvements in design or construction are made as work progresses.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
USING CLOTH AND TRIMMINGS YARNS AND FIBERS *pp: 106-109 Time: 4-6 Weeks	
Making the Article	Article to be made requires a working sketch or pattern. A combination of measuring,cutting,fitting,stitching,weaving, or hooking is used to make a cloth,woven,or hooked article. Design and construction modifications are made as work proceeds.
CONSTRUCTING WITH WOOD AND OTHER MATERIALS *pp: 125-126 Time: 4-6 Weeks	
The Design and Control of the Material	Wood or other construction requires pattern or working sketch. Selection of materials from a wide assortment of shapes and linear elements is required. Adjustments to improve design and construction are made as piece is crafted. Appropriate tools are necessary for control of material.
PUPPETS AND PUPPETRY *pp: 137-139 Time: 4-6 Weeks	
Characterization	Importance of individual puppets is a function of size,color, and expressive characterization.
Heads	Puppet heads are devised from ready-made forms such as boxes, balls,or cans. Puppet heads are modeled from papier-mâché.
Dramatic Effect	Lighting and sound effects increase dramatic qualities. Costumes and stage settings are an important part of puppet show. The puppet stage can be improvised.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
CLEANLINESS AND HEALTH PROTECTION *pp. 168-171	The skin provides a first line of defense against disease and infection. A daily bath serves to wash away harmful germs that gather on the skin. Frequent, regular brushing and washing of the hair helps to prevent conditions such as dandruff, dry scalp, and pediculosis (head lice). It is important for hands to be washed after using the toilet and before handling or eating any food. Protection against infection is reinforced when people are careful not to share towels, combs, brushes, and other personal toiletries.
NUTRITION *pp. 171-173	Many parts of the body assist in the digestion of food. Daily practices should be established to promote good digestion, such as eating in pleasant surroundings and in a leisurely fashion, and eating meals at regular times.
DENTAL HEALTH *pp. 174-176	A tooth is constructed of three main parts: the crown, neck, and the root. The tooth is composed of three types of living tissue: the enamel, dentine, and pulp.
MENTAL HEALTH *pp. 176-181 Also see FAMILY LIVING INCLUDING SEX EDUCATION	Personality development depends upon heredity, environment, and experiences. An individual's attitude toward self, family, friends, and school has an important influence on personality.

* HEALTH EDUCATION IN ELEMENTARY SCHOOLS Curriculum Bulletin No. 2

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MENTAL HEALTH (continued)	A positive attitude toward family, friends, school, and community should result in the acceptance and sharing of responsibility. There are specific personality traits which family and friends find acceptable. In order to carry out responsibilities one must learn to budget time for work and play.
EYES AND THEIR CARE *pp. 181-184	Specific body structures and functions serve to protect the eye. The human eye is very similar to a camera. There are three kinds of specialists concerned with the care of the eyes: ophthalmologist, optometrist, and optician. It is important to wear and care for eyeglasses for the improvement of one's vision.
SAFETY AND FIRST AID *pp. 184-190	Accidents are the leading cause of death in the school-age population. Most accidents can be prevented through the development of good safety habits. Many children are hurt as pedestrians and bicycle riders; this can be prevented by following specific safety rules. Wearing the proper clothing for games contributes to safe living. Safety rules should be followed at swimming pools and beaches. First aid means helping someone who is hurt or suddenly ill. This is the kind of help that you give before medical assistance arrives.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
EXERCISE, REST, AND SLEEP *pp. 190-194	Exercise can be obtained in various ways, depending on one's interests. Good health and safety habits make exercise more enjoyable and more valuable for the individual. Rest can be obtained in various ways. One should plan for his or her own exercise and rest. Sleep is important to good health.
ALCOHOL, TOBACCO, AND DRUGS *pp. 194-198	Alcoholic beverages are derived from the fermentation of sugar and yeast. Alcohol is often used on religious and social occasions. Excessive drinking may result in nutritional deficiencies. There are many factors which motivate children to smoke cigarettes. There are also many good reasons why one should not smoke. Tobacco disturbs the normal functions of the body's systems. Marijuana is an illegal drug. Its effects may be harmful.
HUMAN GROWTH AND DEVELOPMENT *pp. 199-200 Also see FAMILY LIVING INCLUDING SEX EDUCATION	Individuals vary in their rates of growth. The onset of puberty varies with individuals. Girls usually reach puberty sooner than boys. The endocrine glands play an important role in pubertal changes. Menstruation is a normal and natural physiological function. Proper hygienic habits during menstruation are important.

LIBRARY MEDIA GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
ORIENTATION TO THE LIBRARY MEDIA CENTER	Review and mastery of previously learned skills.
USE OF LIBRARY MEDIA RESOURCES	Atlases and gazetteers contain information about topography, climate, places, economic and historical developments. Biographical dictionaries contain brief information about a person's life, e.g., Current Biography, Webster's Biographical Dictionary. A thesaurus is a list of words and their synonyms. An almanac is an annual publication containing general information about a variety of subjects. Resources, printed and audiovisual, are selected independently to gather information on specific topics.
INTERPRETATION OF LIBRARY MEDIA RESOURCES	Notes taken from more than one source are correlated for a report. Reports are made orally and in writing. Multi-media bibliographies are compiled using a standard form. Conclusions are drawn from details in illustrations. Folktales and myths, modern and traditional, provide insight into major world cultures.

MATHEMATICS GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
NUMBER; NUMERATION *pp. 23, 24, 34, 42, 44	Counting by thousands to hundred thousands Place value concepts through hundred thousands; period chart Reading and writing four-, five-, six-digit numerals Ordering and comparing whole numbers Use of greater than (>), less than (<), and equal to (=) symbols Round whole numbers to the nearest hundred; to the nearest thousand; to the nearest ten thousand Estimating quantities Concept of decimal notation: .4 .68 Decimal system of numeration - tenths; hundredths Counting by tenths; by hundredths Comparing and ordering tenths; hundredths Reading and writing decimal numerals Equivalent decimals .1 = .10 Relationship between decimal system of notation and dollars and cents Round numbers in decimal form to nearest whole number
ADDITION AND SUBTRACTION OF WHOLE NUMBERS *pp. 24, 25, 30, 37	Algorithm for computing sums and differences of numbers in the thousands; ten thousands; hundred thousands; dollars-and-cents system Algorithm for computing sums of more than 2 addends, sums less than 1 million Application of principle of related operations; of commutative property Estimation - checking for reasonableness of an answer
MULTIPLICATION OF WHOLE NUMBERS *pp. 26, 31, 36, 39, 40	Basic facts Multiple of a number: 6 is a multiple of 3 because 2 x 3 = 6 Algorithm for multiplication of four-place number by numbers less than 10

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Algorithm for multiplication using multiples of 10 as factors: $\begin{array}{r} 10 \\ \times 10 \end{array}$ $\begin{array}{r} 10 \\ \times 20 \end{array}$
	10 as one factor and the other factor named by a two-place number $\begin{array}{r} 10 \\ \times 13 \end{array}$
	Factors named by a two-place number $\begin{array}{r} 34 \\ \times 12 \end{array}$
	Multiples of 10 and multiples of 100 as factors $\begin{array}{r} 100 \\ \times\ 10 \end{array}$ $\begin{array}{r} 200 \\ \times\ 20 \end{array}$
	A two-place number as one factor and a three-place number as another factor $\begin{array}{r} 321 \\ \times\ 23 \end{array}$
	Estimation - checking for reasonableness of the product
DIVISION OF WHOLE NUMBERS *pp. 26, 27, 28, 29, 32, 36, 39	Basic facts - apply the concept of multiplication and division as inverse operations $7 \times 5 = 35$ so $\square \times 5 = 35$ or $5\overline{)35}$
	Concept of division as repeated subtraction
	Algorithm for division of three-place numbers by numbers less than 10, long and short forms

$$\begin{array}{r} 213 \\ 3\overline{)639} \\ -600 \\ \hline 39 \\ -30 \\ \hline 9 \\ -9 \\ \hline 0 \end{array} \qquad \begin{array}{r} 200 \\ 10 \\ 3 \\ \hline 213 \end{array} \qquad \begin{array}{r} 213 \\ 3\overline{)639} \end{array}$$

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Algorithm for division of three-place numbers by two-place numbers $23\overline{)851}$ Estimation - checking for reasonableness of the quotient
FRACTIONAL NUMBERS: COMMON FORM; DECIMAL FORM *pp. 25, 26, 28, 29, 38, 39 34, 35, 36, 42	Concepts: Fraction as an indicated quotient $1 \div 3 = \frac{1}{3}$ Any whole number can be expressed as a fraction with a denominator of 1 $5 = \frac{5}{1}$ Counting; comparing -- expressing comparison as $\frac{1}{2} > \frac{1}{4}$ Fraction names for 1 $\frac{10}{10} = 1$ Improper fraction $\frac{15}{10}$ Mixed numeral $7\frac{3}{10}$ Equivalent fractions with denominators of 2, 4, 8; 5, 10, 100 Procedures for: Expressing a mixed numeral as an improper fraction Expressing an improper fraction as a mixed numeral or as a whole number Finding common denominator Algorithms for addition and subtraction of fractional numbers with related denominators $2\frac{1}{4} + 7\frac{3}{8} = \square$ $\quad 3\frac{3}{8} - 2\frac{1}{4} = \square$ with unlike denominators $2\frac{1}{2} + 3\frac{1}{5} = \square$ $\quad 3\frac{2}{5} - 1\frac{1}{3} = \square$

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	Algorithms for computing sums and differences using tenths: .4 + .3 = ☐ 7.9 - 5.3 = ☐ using hundredths: .04 + .03 = ☐ 7.09 - 5.03 = ☐ Algorithm for computing products of fractional numbers $2 \times \frac{1}{3} = \square$ $\frac{1}{2} \times \frac{1}{2} = \square$
MEASUREMENT *pp. 25, 27, 29, 33, 44	Linear: Estimating length; reading scales on rulers; measuring perimeter Standard units - kilometer, meter, decimeter, centimeter, millimeter mile, foot, inch Relationships between standard units: 1 m = 100 cm = 1000 mm 1 m = 10 dm Weight: Estimating weight; reading scales on measuring devices Standard units - metric ton, kilogram, gram, milligram pound, ounce, ton Relationships between standard units: 1000 mg = 1 g Capacity: Estimating capacity; reading scales on measuring devices Standard units - kiloliter, liter, milliliter ounce, cup, pint, quart, gallon Relationships between standard units 1 kL = 1000 L Time: Estimating lengths of time Relationships: months-years; seconds-minutes-hours;

MATHEMATICS GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
	days-weeks-months Concepts of decade and century Temperature: Measuring temperature using Celsius and Fahrenheit thermometers Standard units - degree ^{o}C and degree ^{o}F Reading and writing temperature measurement $0^{o}C$ - freezing point of water
GEOMETRY *pp. 29, 32, 43	Polygons (quadrilaterals, triangles, pentagons) Some characteristics of the circle Concept of circumference
GRAPHS; STATISTICS; PROBLEM SOLVING; PROBABILITY *pp. 24, 25, 30, 31, 36, 37	Meaning of average (mean) Computing average Collecting and organizing data Constructing and interpreting bar graphs; line graphs Deriving word problems and questions relevant to the bar and line graphs Recognizing the appropriate number operation(s) needed to solve word problems

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LISTENING	
Style Melody	Phrases in a melody vary even when repeated. The expressive quality in music can be compared to other arts, e.g., paintings. Composers often favored a particular style of composition , e.g., harmonic, contrapuntal.
SINGING *p. 26-35	Melodies are often arranged in two, three-or four-part harmony.
Part-Singing	Understanding and hearing intervals are important to part-singing. Part-singing is introduced through rounds, partner songs and descant. Listening is integrated with singing to produce part-singing.
RHYTHM *p. 6-19	Rhythm is the force which generates musical flow. 6/8, 9/8 and 12/8 are compound meter signatures. 5/4 and 7/8 are seldom used in American traditional songs.
MUSIC READING *p. 86	
Melodic Patterns	Melodies often move in repeated musical phrases. Written symbols (musical notation) provide a system of storing and retrieving musical ideas.
Solfeggio	Solfeggio is a system in which the tones are named, e.g., do, re, mi, fa, sol, la, ti, do.
INSTRUMENTAL *p. 71	The classroom instrumental music experience includes: pitched and non-pitched rhythm instruments, and the recorder.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
SPORTS SKILL DEVELOPMENT	
Basketball	Exploring how to pass, catch and shoot Discovering efficient ways of performing these skills Refining catching below and above the waist passing - chest pass, chest bounce pass, push bounce pass shooting - chest shot, chest foul shot, underhand foul shot Applying skills in squad activities and lead-up games Knowing formations for practice of drills - single/double lines, circle, semi-circle
Soccer	Exploring how to trap, dribble, kick, and pass Discovering efficient ways of performing these skills with different parts of the foot Refining how to trap with sole of foot, one knee, both knees Dribbling with inside of foot and toe Kicking and passing with inside/outside of foot, top of instep, heel, toe Applying these skills to squad activities and lead-up games Knowing formations for drills - single/double lines and circles
Track and Field	Exploring starts, running form for sprints, visual baton pass, and standing broadjump Refining indoor sprint start, outdoor sprint start, standing start, crouching start, running form, visual baton pass, standing broadjump Applying these skills to squad and lead-up activities Knowing formations for drills - single and double lines and circles

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
GYMNASTICS	
Stunts and Tumbling	Exploring rolls--forward, backward, log balances--headstand, handstand, cartwheel Gaining efficiency in rolls and balances Refining these skills Executing forward roll from a squat, backward roll, continuous rolls on several mats, frog headstand, headstand
Apparatus: Balance Beam	Exploring ways of mounting and dismounting the beam and performing locomotor movements Discovering efficient ways of mounting, dismounting and performing locomotor movements Executing locomotor movements: Walks - forward, backward, sideward dips walk to center of beam, turn and return Dismounting with an upward jump with arms straight up and body arched
Apparatus: Vaulting Box	Exploring mounting and dismounting and vaulting over low sections of the box Discovering efficient ways to mount, dismount,and vault over the box Approaching the box from right or left side preparatory to performing on it Jump on box, kneel and jump off. Execute vaults with body moving over higher sections of the box. Execute a forward roll on the box.
DANCE	
	Combining specific locomotor steps to music Performing two-step, step-hop, walk, balance, heel-toe, run

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
DANCE (Cont.)	Performing patterns: circle, star, swing, lines of three, wheel, do-si-do Performing: Cowboy Schottische, Danza (Puerto-Rican), Red River Valley, Sicilian Tarantella
PHYSICAL FITNESS	
AAHPER Youth Fitness Test Items	Achieving physical fitness levels necessary to pass national and standardized tests: pull-ups, flexed-arm hang, sit-ups,shuttle run, long jump (standing broad jump), 50-yard dash, 600-yard run-walk
Rope Jumps	Performing endurance jump--120 jumps per minute Performing speed jump--35 in 10 seconds Performing coordination jump--cross rope forward

SCIENCE GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
HOW MAN CHANGES MATERIALS *pp: 26-49 Time: 6 weeks	
Separating Substances	Fresh water may be obtained from salt water by the processes of evaporation and condensation of the water, leaving the salt behind. Filters and strainers separate particles of different sizes. Solids which do not dissolve may be separated from liquids by using a filter or strainer. Some liquids which do not mix can be separated by standing.
Chemical Changes	Living things such as bacteria, yeast, and mold make changes in food. These changes are souring, changing sugar into alcohol and carbon dioxide, and changing alcohol to vinegar. Carbon dioxide gas is made when baking powder is mixed with water. Household bleach releases oxygen which combines with a dye and changes it. Rust forms when iron combines with oxygen. Fuel, sufficient air, and heat are needed for burning. Fires can be put out by removing the fuel, cutting off the air supply, or lowering the temperature. When a candle burns, water and carbon dioxide are produced. When a different substance is made, a chemical change occurs.

*SCIENCE - GRADE 5, #6, 68-69 Series

SCIENCE GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
LITTLE ENVIRONMENTS *pp: 50-76 Time: 5 weeks In the Schoolyard, On and Under A Tree, On the Lawn, In the Soil, In the Water	Many kinds of plants and animals live in New York City. The living things vary in size. Each kind of environment has its own conditions of heat, moisture, wind, light, minerals, air, plants, and animals. Plants and animals depend upon each other and their environment for food, warmth, shelter, air, and water. Green plants are producers, animals are consumers. Certain microscopic bacteria and fungi are decomposers. Living things change the environment.
THE SUN'S FAMILY *pp: 77-105 Time: 5 weeks Planet Earth in the Solar System	The earth is one of nine planets which orbit around the sun. Planets are illuminated by light from the sun and move in elliptical orbits around the sun. The distance of a planet from the sun varies during its revolution. Planets are at different distances from the sun; those closest to the sun move the fastest. Asteroids and comets are part of the solar system.

SCIENCE GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Our Star, The Sun	The sun is a nearby star; stars are distant suns. The sun shines because of its own atomic activities. Life depends on the sun. The sun rotates on its axis and could accommodate over a million earths inside it. It takes light eight minutes to travel from the sun to earth. The entire solar system moves in space.
CLIMATE *pp: 106-137 Time: 7 weeks	
Climate and Weather	Climate is the average weather for a region over a long period of time. There are many climates in the United States. The most important characteristics of a climate are temperature and moisture.
Climate and Latitude	Latitude is the distance of a place from the equator and determines year-round temperature. The more slant to the sun's rays, the less heating results. Winds are caused by the unequal heating of the earth.
Climate and Oceans	Water warms up and cools off more slowly than land. Coastal cities are warmer in winter and cooler in summer than inland cities at the same latitude. The West Coast climate is different from that of the East Coast because of prevailing westerlies. There is a water cycle.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Climate and Mountains	Mountains affect temperature and rainfall. The higher the elevation, the cooler the region. The side of a mountain facing the wind has more rainfall than the other side. When moist air is pushed up a mountain, it cools, the water vapor condenses into clouds, and rain may fall.
MIRRORS AND THE REFLECTION OF LIGHT *pp: 138-157 Time: 5 weeks	
Seeing With Mirrors	The image of an object is reversed in a mirror, left to right. Tilting a mirror at different angles helps to see other objects. A mirror works because it reflects light.
Mirrors Reflect Light	A mirror changes the direction of light striking it. The path of light reflected from a mirror can be changed by facing the mirror in different directions. Light can be reflected many times. The angle of incidence equals the angle of reflection.
MAKING IT GO *pp: 158-188 Time: 6 weeks	
Muscles Make It Go	Muscles move many tools and machines. Muscles move arm and leg bones to which they are attached. Muscles work in pairs opposing each other.
Flowing Water Can Make It Go	Water flowing downstream can move heavy loads and turn wheels. Running and falling water can exert a force. A dam is built across a body of water to raise the level of the water behind it. The sun is the source of energy for flowing water.
Wind Makes It Go	The heating of the earth causes winds. Winds move sailboats and turn windmills.

SCIENCE GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
Steam Makes It Go	Steam from water boiled in a confined space can push very hard. Steam turns the blades of wheels and drives propellers of ships. Steam gets its driving force from burning fuel or nuclear energy.
Rapid Burning Makes It Go	Hot gases are produced when fuels burn. In some engines, the hot gases push against the pistons which drive wheels or propellers which make the vehicle go. In jets and in rocket engines, hot gases are blown out of the rear end causing the vehicle to go forward. Jets use oxygen from the air; rockets carry their own supply.
BATTERIES AND BULBS *pp: 189-218 Time: 6 weeks	
Bulbs in Different Kinds of Circuits	Electricity flows in a circuit. A series circuit provides only one path for the current. A parallel circuit provides two or more paths for the current. In a parallel circuit, the other bulbs will remain lit if one bulb goes out. In a series circuit, all the bulbs go out if one goes out.
Dry Cells in Different Kinds of Circuits	The voltage of a series arrangement of dry cells is equal to the sum of the voltages of the individual cells. The voltage of a parallel arrangement of similar cells is equal to the voltage of any individual cell.
Fuses	A fuse is a special metal strip that is part of a circuit which melts when too much electricity flows through it.

SOCIAL STUDIES GRADE 5

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
AMERICAN PEOPLE AND LEADERS: HOW THE UNITED STATES BEGAN AND GREW Review and reinforce grade 4 learnings to meet individual and class needs.	
WHAT ARE THE MAJOR GEOGRAPHIC FEATURES OF THE EARTH? Time: 4 weeks	Our home is the planet earth which is part of the solar system. The seven largest land masses are called continents. These continents are separated by natural boundaries such as mountains and bodies of water. There are four large bodies of water called oceans. The equator divides the earth into the northern and southern hemispheres. An imaginary line from the north pole to the south pole creates the eastern and western hemispheres. Global geographic knowledge includes air masses, weather, wind, ocean currents and natural resources.
HOW DO OUR NEIGHBORS IN THE WESTERN HEMISPHERE USE THEIR RESOURCES AND GEOGRAPHY? Required Case Studies: Canada Mexico and Caribbean Sea Area South America Time: 14 weeks	See the sample case study for sub-topics.
CANADA (A Sample Case Study) (See pp. 248-249.)	

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
GEOGRAPHIC FEATURES	
Location Natural environment Population distribution	The region is characterized by mountains, hills, plateaus and plains, extensive waterways and a harsh climate.
HISTORICAL DEVELOPMENT	
Significant trends - past to present Important leaders Current changes	Early exploration and settlement by French and English; gradual development from British Colony to Commonwealth; growth of parliamentary democracy
ECONOMIC PRACTICES AND CHIEF OCCUPATIONS OF THE PEOPLE	
Meeting needs (food, clothing and shelter) Producing goods and services for wants	
Geographic basis for industry	Great natural resources are mineral, water, forest and wildlife.
Geographic basis for agriculture	Semi-arid lands lend themselves to wheat production, cattle and sheep ranching.
Interdependence within the region and with other regions	There are many resources within the region that make it one of the world's important food-exporting and manufacturing nations of the world. The economy of this region is in many ways dependent upon the economic conditions in the United States.
SOCIAL AND ECONOMIC PRACTICES OF THE REGION	This is a bilingual, bicultural democracy: French and English. There are many cultural differences among the various ethnic groups. This country has a high standard of living and high levels of education.

CONTENT AREA AND TOPIC	SKILLS AND KNOWLEDGE
MAJOR PROBLEMS IN THE REGION	Conflict between French and English Canadians has intensified. Cultural differences have led to social, political, and economic difficulties. Economic dependence upon the United States has caused conflict in maintaining Canadian identity.
HOW DO PEOPLE AROUND THE WORLD USE THEIR RESOURCES AND GEOGRAPHY? Required Case Studies: Select Two of the Following World Regions: Western Europe Eastern Europe and U.S.S.R. Middle East Far East Africa, South of the Saharas Africa, North of the Saharas Time: 10 weeks	The characteristics of different countries and regions are studied, with particular emphasis on geographic, economic and cultural relationships.
HOW CAN WE BETTER UNDERSTAND GLOBAL TRENDS AND ISSUES? Time: 10 weeks	Current world problems include overpopulation, environmental pollution, conservation, race relations, political and territorial disputes, unemployment and inflation, poverty, control of disease, etc.
CURRENT AFFAIRS	Current affairs are studied to see the effect on children's lives, and to assist in the development of civic responsibility.
WORK STUDY SKILLS	Degrees of longitude and latitude are used to find location. Degrees of longitude are used to understand time zones. Newspapers, magazines, pamphlets, and audiovisuals are used as sources of information. A variety of maps is interpreted and used: elevation, products, rainfall. Grid system is used to find locations. Events are arranged in chronological order. Outerspace maps are used to identify contours and shapes of land masses.

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Louise Miller, P.S. 287, District 13
Arlene Lichterman, P.S. 100, District 21
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Gloria Saunders, Principal, P.S. 299-K
Alvin, Yarman, Principal, P.S. 205-Q
Loretta Boyce, Principal, I.S. 383-K
Laura Goodman, UFT Library Media Committee
Shirley Rappaport, New York City School Librarians' Association

MATHEMATICS

DEVELOPERS AND WRITERS OF ORIGINAL MATERIALS

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Alice Lombardi, Mathematics Coordinator District 24

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Jennie Berger, Dist. 16
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Shirley Brady, Dist. 17
Eric Calyo, Dist. 7
Janet Castellano, Dist. 31
Maria DeSalvio, Dist. 1
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Leah Karp, Dist. 11
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Linda Zern, Dist. 7
Robert Atkins, Asst. Princ.
John Adams HS
James Bruni, Prof. Math. Ed. Lehman College
Aaron Buchman, Assoc. Bureau of Math Ed, State Education Dept.
Edward Carroll, Prof, Math Ed N.Y.U.
Jacob Cohen, Asst. Principal F. Roosevelt H.S.
Terrance Conaty, Teacher. JHS 117M
Ira Ewens, Principal James Madison HS
Jerome Fisher, Asst. Principal IS 218K
Thomas Fransko, Teacher, JHS 117M
Dorothy Geddes, Prof. Math Ed. Bklyn College
Blanche C. Gladstone, Corrective Math Specialist - Title I Corrective Mathematics Program
Edward Graybow, Teacher, JHS 117M
Cynthia Griffin, Teacher, JHS 117M
Harold Grill, Principal, JHS 104M
George Grossman, Dir. (retired), Center for Math & Science
Irwin Kaufman, Asst. Principal, South Shore H.S.
Henry Leighton, Asst. Principal, JHS 166K
Phillip Levine, Teacher, JHS 117M
Ira Lyons, Asst. Princ. IS 13M
George Mills, Principal, JHS 17M
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Donald Rosen, Teacher, JHS 117M
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Harry Ruderman, Chairman Math, Hunter H.S.
Murray Soffer, Asst. Principal, IS 111K
Lucille A. Stovall, Coordinator - New York City Corrective Mathematics Program
Bruce Vogeli, Prof. Math Ed. Teachers College
Stephen S. Willoughby, Prof. of Math Ed., N.Y.U.

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Shirley Brady, Math Coordinator, Dist. 17
Joseph Gehringer, Teacher, JHS 65M
Alan Ginsberg, Asst. Principal, JHS 125Q
Harriet Haynes, Teacher, JHS 88K
Marvin Kreutzberger, Math Coordinator, Dist. 19
Alice Lombardi, Mathematics Specialist, Center for Math and Science
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MUSIC

DEVELOPERS AND WRITERS

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George Hall, Chairman of Music, Taft H.S.
Elton Warren, Supervisor of Music, District 9
Jeanette Carlstein, Supervisor of Music (Retired)

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Martin Gottesfeld, Chairman of Music, Martin Luther King H.S.
Asta Hairston, Supervisor of Music, District 17

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DEVELOPERS AND WRITERS

Angela Zirpiades, Assistant Director, Physical Education
Lillian Vitaglione, Movement Specialist - P.S. 41 - wrote grades K - 6
Bernard Kirschenbaum, Assistant Director, Physical Education - wrote grades 7 - 9
Revisions were based on field evaluations and the new curriculum bulletin.

SCIENCE

DEVELOPERS AND WRITERS OF ORIGINAL MATERIALS

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Samuel Silverberg, Asst. Principal, Science, J.H.S. 202Q
Lillian Silverman, Asst. Principal, Science, I.S. 292K
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Appendix A - Phoneme Tables

Table 10-1. Consonant Correspondences in Various Positions *

[This chart, provided for teacher reference, is to be used at the teacher's discretion. Individual items are to be taught to the children as and when needed.]

Sound or Phoneme	Letter Label	Position		
		Initial	*Medial*	*Final*
/b/	b	bat	tuba	cab
/k/	c	can		
	k	kitten	baker	break
	ck		packer	sack
	ch	chasm		
	qu	quick	liquor	opaque
/s/	s	sit		
	ss		passer	pass
	c	city	racer	
	ps	psalm		
/č/	ch	chip	catcher	rich
	c	cello		
/d/	d	doll	soda	mad
/f/	f	fit	heifer	life
	ff		baffle	cuff
	ph	photo	siphon	
	gh			rough
/g/	g	get	tiger	rag
	gh	ghetto		
	gg		bigger	
/j/	g	gym		rage
	j	jump		
	dg		ledger	badge
/h/	h	house	ahead	
	wh	who		
/l/	l	lake	sailor	metal
	ll		filling	hall
/m/	m	man	tamer	ham
	mb		comber	tomb
	mm		summer	
/n/	n	night	finer	hen
	nn		sinner	
	gn	gnaw		
	kn	knit		

Sound or Phoneme	Letter Label	Position		
		Initial	*Medial*	*Final*
/n/	ng		singer	sing
	n		drink	
/p/	p	picnic	piper	drip
	pp		supper	
/r/	r	rain	bearer	car
	rr		hurry	burr
	wr	wreck		
	rh	rhetoric		
/š/	sh	ship	smasher	lash
	s	sure		
	ci		specious	
	ce		ocean	
	ss		passion	
	ti		nation	
/t/	t	teacher	meter	hit
	tt		sitter	
	pt			receipt
	bt		debtor	debt
/θ/	th	thin	ether	path
/ð/	th	then	either	bathe
/v/	v	voice	mover	wave
/w/	w	work	shower	cow
/ks/	x			box
/y/	y	yard	Sawyer	say
/z/	z	zoo	blazer	
	s		loser	dogs
	zz		nozzle	jazz
/ž/	z		azure	
	s		measure	
	si		delusion	

* Robert B. Ruddell, Reading-Language Instruction: Innovative Practices (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1974) pp. 297-298. Reprinted by permission.

Table 10-2. Vowel Correspondences **

Sound Label	*Vowel*	*Letter Label*	*Example*
Unglided or short	/æ/	a	at
		au	laugh
Glided or long	/ey/	a.e	lane, ate
		ai	bait
		ea	break
		ei	rein
Unglided or short	/e/	e	men
		ea	head
		eo	leopard
		ai	said
		ie	friend
Glided or long	/iy/	e.e	Pete
		e	be
		ea	beat
		ee	beet
		ei	receive
		ie	belief
Unglided or short	/ɪ/	i	bit
		ui	build
		y	hymn
		u	busy
Glided or long	/ay/	i.e	bite
		uy	buy
		ie	flies
		ai	aisle
Unglided or short	/a/	o	hot
Glided or long	/ow/	o.e	nome
		oa	boat
		ow	show
		o	go
		ew	sew

Sound Label	*Vowel*	*Letter Label*	*Example*
Unglided or short	/ə/	u	bus
		oo	blood
		ou	enough
Glided or long	/yuw/	u.e	mule
		ew	few
Unglided or short	/u/	oo	good
		u	put
		ew	flew
		ui	fruit
Unglided or short	/ɔ/	a	talk
		au	Paul
		o	dog
		aw	law
Glided or diphthong	/aw/	ow	drown
		ou	loud
Glided or diphthong	/ɔy/	oy	toy
		oi	coin
Note: an unglided or short vowel followed by -r is sometimes referred to as an r-controlled vowel	/ar/, /er/	ar, ea	cart, pear
	/ir/, /ɔr/	ea, oa	ear, oar
	/ur/, /yur/	oo, u.e	poor, pure
	/ər/	e	her

** Ruddell, Reading-Language Instruction: Innovative Practices, pp. 298-299
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APPENDIX B
CURRICULUM PUBLICATIONS

PRINTED PUBLICATIONS

Available from:

****

Publication Sales Office
New York City Board of Education
110 Livingston Street
Brooklyn, New York 11201

****

ART

Art in the Elementary Schools
1963-64, No. 8: 146 p.

Art for the Middle School
1977-78, No. 3: 127 p.

Art Teaching Guides: Puppets and Puppetry
1968-69, No. 8h (Reprinted 1975):
20 p.

COMMUNICATION ARTS

Handbook for Language Arts: Pre K-Grade 2
1965-66, No. 8 (Reprinted 1975): 416 p.

Sequential Levels of Reading Skills:
Grades Pre K-12
1967-68, No. 4 (Reprinted 1970, 1975
1979): 324 p.

Handbook for Language Arts: Grades 3 and 4
1969-70, No. 6: 360 p.

Handbook for English Language Arts,
Grades 5-12: Reading and Literature
1967-68, No. 10 (Reprinted 1969,
1975, 1979): 324 p.

Handbook for English Language Arts,
Grades 5-12: Speech and Composition
1969-70, No. 21: 221 p.

Handbook for English Language Arts:
Grades 5-12: Language Strand
1974-75, No. 4: 286 p.

ENGLISH AS A SECOND LANGUAGE

ESL: Teaching English as a Second
Language in the Middle Grades
1967-70, No. 7: 190 p.

FOREIGN LANGUAGES

Chinese: Levels 1 and 2
1972-73, No. 7: 165 p.

German: Levels 1-4
1966-67, No. 11c: 222 p.

Hebrew: Levels 1-4
1966-67, No. 11b: 207 p.

Latin: Levels 1-4
1967-68, No. 19: 146 p.

Russian: Levels 1-4
1970-71, No. 6: 224 p.

HEALTH EDUCATION

Health Education in the Elementary
Schools
1969-70, No. 2: 249 p.

Health Education in the Secondary
Schools
1972-73, No. 10: 341 p.

HOME ECONOMICS

Home Economics Grades 7-8-9 **
1963-64, No. 4: 169 p.

Young New Yorker's Cookbook
1973-74, No. 9: 244 p.

INDUSTRIAL ARTS

Ceramics for Secondary Schools
1961-62, No. 7 (Reprinted 1966, 1974): 130 p.

Industrial Ceramics
1971-72, No. 5: 133 p.

Drafting Experiences for Intermediate School Pupils: A Resource Bulletin for Teachers of Industrial Arts
1966-67, No. 9 (Reprinted 1970): 75 p.

Electricity - Electronics for Intermediate and Junior High School
1970-71, No. 11: 196 p.

Graphic Arts Grades 7-8-9
1965-66, No. 13: 65 p.

Metalworking for Secondary Schools
1966-67, No. 7: 191 p.

Woodworking: Grades 7-8-9
1965-66, No. 14: 67 p.

Industrial Arts Woodworking: Secondary Schools
1963-64, No. 10 (Reprinted 1969): 111 p.

MATHEMATICS

Mathematics: Pre K-1, Part 1
1966-67, No. 6a (Reprinted 1968, 1974): 67 p.

Mathematics: Pre K-1, Part II
1966-67, No. 6b: 150 p.

Mathematics: Grade 1 - Scope and Sequence
1970-71, No. 2: 16 p.

Mathematics: Grade 2
1977-78, No. 11: 180 p.

Mathematics: Grade 3
1977-78, No. 9: 172 p.

Mathematics: Grade 4 and Grade 5 - Scope and Sequence
1969-1970, No. 8 (Reprinted 1973, 1975): 46 p.

Mathematics: Grade 6 - Scope and Sequence
1970-71, No. 4: 22 p.

Mathematics: 9th Year
1966-67, No. 4 (Reprinted 1969): 304 p.

General Mathematics: 9th Year
1964-65, No. 16 (Reprinted 1968, 1970): 270 p.

MUSIC

Teaching Music: Grades K-4
1978-79, No. 5: 99 p.

SCIENCE

Science: Grades K-2
1965-66, No. 7 (Reprinted 1968, 1970, 1975): 267 p.

Science: Grades 3-4
1966-67, No. 11 (Reprinted 1969, 1975): 339 p.

Science: Grade 5
1968-69, No. 6 (Reprinted 1974): 264 p.

Science: Grade 7
1971-72, No. 2: 313 p.

Science: Grade 8
1967-68, No. 20: 400 p.

Science: Grade 9
1968-69, No. 9: 309 p.

SOCIAL STUDIES

Grade 1: Living and Working Together in the Community
1967-68, No. 26 (Reprinted 1970, 1976): 113 p.

Grade 2: How People Live in City Communities Around the World
1968-69, No. 2: 199 p.

Grade 4: American People and Leaders: How the United States Began and Grew
1968-69, No. 3: 130 p.

Grade 7: American History: Historical Development of the United States
1967-68, No. 2e (Reprinted 1970): 130 p.

Grade 9: World Studies: Eastern Civilizations - Regional Studies (Revised Edition)
1969-70, No. 12: 397 p.

EXPERIMENTAL PUBLICATIONS

Available from:

****

Center for Curriculum Development
New York City Board of Education
131 Livingston Street Room 601
Brooklyn, New York 11201

****

ART

Art in the High School
May 1974: 102 p.

FOREIGN LANGUAGES

Foreign Language Revision Program:
French
June, 1975,: 99 p.

Foreign Language Revision Program:
Italian
June, 1975: 99 p.

Foreign Language Revision Program:
Spanish
June, 1975: 102 p.

INDUSTRIAL ARTS

Industrial Arts Aerospace for
Intermediate and Junior High
School, Part 2
August, 1970: 120 p.

Graphic Arts for Secondary Schools
March, 1970: 159 p.

Paste Make-up -- A Teaching Guide
Summer, 1970: 76 p.

Plastics for Secondary Schools
June, 1967: 195 p.

School Shop Safety Manual
October, 1977: 125 p.

Teachers Handbook for the Handicapped **

** Available from:

Industrial Arts
N.Y.C. Board of Education
131 Livingston Street Room 511
Brooklyn, N.Y. 11201

MATHEMATICS

Fundamentals of Mathematics, Part 1
November, 1978: 144 p.

Fundamentals of Mathematics, Part 2
November, 1978: 136 p

MUSIC

Teaching Music, Grades 5 and 6
December, 1975: 106 p.

SCIENCE

Investigating our Environment, Science
Grade 6
June, 1974: 248 p.

SOCIAL STUDIES

Grade 8: Urban Growth: Citizenship in
a Changing Society
December, 1978

FACULTY PRESS, INC., BROOKLYN, N.Y.